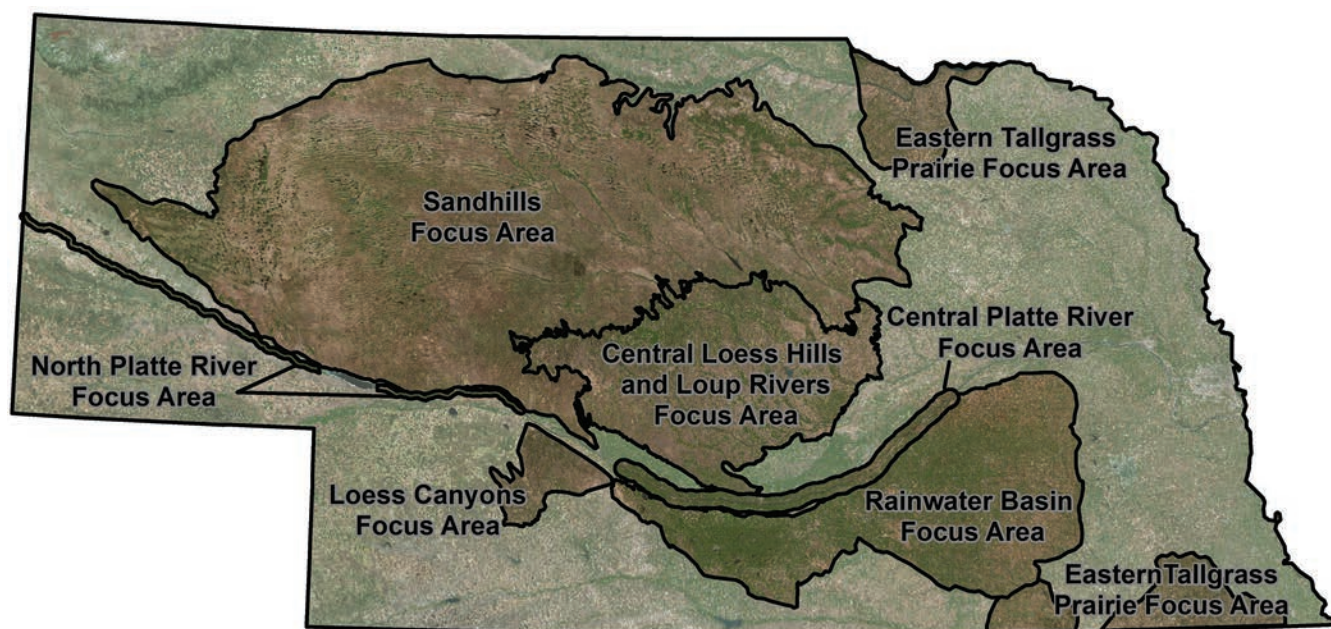


Nebraska



Nebraska PFW program Focus Areas. USFWS map.

Introduction and Overview

Nebraska is the biological crossroads of the Great Plains, where northern species reach their southern limits, east meets the west, and southern species stop to rest and refuel prior to heading to their northern breeding grounds. The landscapes in Nebraska are equally diverse, dictated by hydrology, soils, and more importantly, the climatic gradient that spans from east to west, which promotes plant and wildlife species richness. From the Missouri River bluffs to the Sandhills to the Pine Ridge in the northwest Panhandle, Nebraska has more river miles than any other state, bisecting tallgrass prairie, mixed-grass prairie, and short-grass prairie.

Within these landscapes, over 48,000 farms and ranches work to provide food to a

growing population, while conserving Nebraska's overall biological diversity. Nebraska is approximately 97% privately owned, therefore the conservation of Nebraska's diverse flora and fauna is largely dependent upon private landowners and the conservation tools they use to manage Nebraska's vast resources.

The overall objective of the Nebraska PFW (NE PFW) program is to work cooperatively with landowners and other partners throughout the state to restore and maintain habitat for Federal Trust Species. The careful selection, design and implementation of restoration projects allows the NE PFW program to maintain Nebraska's biological diversity and keep habitats intact to counteract the impacts of climate change and other environmental stresses. NE

PFW provides both financial and technical assistance to landowners and our partners involved in the implementation of key conservation programs throughout Nebraska.

The NE PFW program set lofty habitat goals for the FY 2012–2016 Strategic Plan. Numerous private landowners (and conservation partners), who voluntarily entered into landowner agreements to restore, enhance, and manage habitat on their land for Federal Trust Species, have made the NE PFW program successful. Over 300 new habitat projects were completed throughout Nebraska's conservation focus areas over the 5-year strategic plan period of performance (2012–2016). Nebraska's private landowners continue to be our most important partner and none of the habitat projects could have been accomplished without their desire



North Platte River private landowner with Nebraska PFW biologists at a PFW riverine habitat restoration project near Paxton, Nebraska. Photo by Joe Milmoie, USFWS.

to conserve and restore habitat on their lands.

Our main emphasis for FY 2017–2021 will be to continue to develop successful and effective partnerships to restore wetland, grassland, riverine, and riparian habitat on private lands to help meet population objectives for focal species and prevent the further listing of species as federally endangered or threatened. The NE PFW program will focus its delivery in ecosystems and habitats where conservation actions will accomplish the greatest biological benefit per conservation dollar expended.

Restoring and maintaining the functionality of natural communities and ecological systems as a way to ameliorate potential effects of climate change remains a focus of NE PFW staff. Projects will be prioritized, planned, and designed to address current stressors (e.g., invasive species,

habitat fragmentation, lack of fire, changes in hydrologic regimes) that will be most exacerbated by climate change. The NE PFW program will continue to work with our partners to provide high quality migration habitat for migratory birds (e.g., waterbirds, waterfowl, shorebirds, wading birds, listed species, grassland birds) and high quality prairie grassland habitat for grassland nesting birds and the numerous other species of plants and animals that depend on these systems for their survival.

To continue NE PFW's strong history of program implementation throughout Nebraska, we have revisited our existing conservation focus areas and have made adjustments for the FY 2017–2021 strategic plan to expand on our successes and increase the effectiveness and consistency of our program. Changes to our conservation focus areas were made based on numerous criteria including habitat loss,

future threats, analysis of habitat functions and values along with benefits to Federal Trust Species. Proximity to Service lands and other protected areas, available funding, staff, and partner goals were also evaluated.

The PFW program and its partners are on the cutting edge of new data resources in large part due to a strong relationship with the Rainwater Basin Joint Venture GIS Team and other conservation planning partnerships, combining GIS land coverages and species/habitat models for all of our focus areas. These data resources are intricately aligned with the goals of numerous existing national, regional, state and local conservation plans. GIS data layers and habitat/species modeling efforts were utilized to refine focus areas and will be used to prioritize project delivery for target species/habitats during FY 2017–2021.

A high priority will continue to be given to projects located in four of our original focus areas that are recognized as being of international importance to wildlife. These include projects located within the Rainwater Basin area of south-central Nebraska, the Big Bend reach of the central Platte River, the Sandhills in north-central Nebraska, and the North Platte River valley. In addition, portions of the Eastern Tallgrass Prairie, Loess Canyons, and the Loess Hills/Loup River systems are NE PFW focus areas. NE PFW staff will continue to provide technical assistance to other partners in their efforts to deliver conservation programs within other important biological unique landscapes.

In 2005, the Service approved the Nebraska Natural Legacy Project (Legacy Plan), which is Nebraska's Comprehensive Wildlife Action Plan. The plan was developed with the collaboration of over 500 biologists/conservation practitioners, citizens and private landowners. A twenty-member partnership team that included representatives from major conservation, agricultural, and tribal organizations guided the planning efforts. The Legacy Plan represents Nebraska's comprehensive strategy to conserve at-risk and other wildlife species throughout Nebraska. The plan was revised in 2011 and a second edition (Schneider et. al 2011) of the plan was developed, which included some minor changes in the boundaries of existing biologically unique landscapes. The Legacy Plan identifies over 500 species of animals and plants that are considered at-risk. It lists key threats to at-risk species, conservation actions needed to overcome threats, and prioritizes research and survey needs. The plan identifies forty biologically unique landscapes that provide the best opportunities to conserve the majority of Nebraska's biological diversity. NE PFW conservation focus areas include all or portions of numerous biologically unique or important migratory bird landscapes identified in Nebraska's revised wildlife action plan.

Partner Coordination

NE PFW continually seeks input on general PFW program direction, conservation focus areas, priority focal species, and future strategies/activities from key partners. The priorities for the NE PFW program and the strategic plan revision were developed in coordination with our diverse group of partners including the Nebraska Game and Parks Commission (NGPC), Rainwater Basin Joint Venture (RWB JV), Sandhills Task Force (STF), Platte River Whooping Crane Trust (Crane Trust), DU, NRCS, Northern Prairie Land Trust (NPLT), Bird Conservancy of the Rockies (BCoR), Platte River Basin Environments, Inc. (PRBE), Prairie Plains Resource Institute (PPRI), National Audubon Society's Nebraska State Office and Rowe Sanctuary (Audubon), Pheasants Forever (PF), private landowners, and numerous other groups and organizations located throughout the state.

The NE PFW program will continue to develop successful partnerships with private landowners and other agencies and organizations to improve habitat on private land throughout Nebraska. The NE PFW is committed to continue to work in close coordination with the National Wildlife Refuge System, Nebraska Ecological Services Field Office and the RWB JV Office to implement conservation actions that compliment Service lands and provide the greatest biological benefit for Federal Trust Species.

Rainwater Basin Focus Area



The Rainwater Basin wetland complex is comprised of flat to gently rolling loess plains formed by wind-blown silt. The area is named for its high density of clay pan playa wetlands, which once

covered 204,000 acres across parts of 21 counties in south-central Nebraska. Historically, 11,000 playa wetlands occupied this 6,150 square mile landscape, providing foraging and roosting opportunities for millions of waterfowl, shorebirds, and the federally endangered whooping crane during their spring and fall migration.

Rainwater Basin wetlands lay at the bottom of closed watersheds, collecting precipitation from intense summer storms and runoff from winter snow melt, in turn ponding shallow water across hydric soils. Rainwater Basin wetlands receive additional water from its closed watershed, where runoff from saturated upland soils drains down waterways over time and contribute to a longer wetland hydroperiod. These watersheds historically fed approximately 1,000 semi-permanent and seasonal flooded wetlands, totaling 70,000 acres, and over 10,000 temporary wetlands, totaling 134,000 acres. Recent analysis of LiDAR data determined a wetland's watershed size can range from 26 acres for small wetlands to 27,700 acres for large wetlands.

As a result of the fertile soils and abundant groundwater resources in this region, the majority of Rainwater Basin wetlands were, and continue to be, filled, drained and farmed. Major efforts to drain wetlands occurred prior to the Swampbuster Act of 1985, resulting in the loss of 90% of all historic wetlands by 1982. Of the 10% that remained, semi-permanent wetlands, with deep clay pans and standing water almost year-round, were the most difficult to drain and comprised the majority of the remaining wetland acres (68%) and temporary and seasonal wetlands, with shallower clay pans and shorter hydroperiods, were easily drained. Only 32% of the remaining wetland acres are temporary and seasonal in nature. Today, playa wetlands in the Rainwater Basin make up less than 1% of the landscape, which is heavily dominated by row-crop agriculture. Filling and draining wetlands immediately alters wetland



Restored wetlands provide habitat for a suite of high priority waterfowl species. USFWS photo.

hydrology and hydroperiod. Watershed modifications, such as pits in uplands and the removal of grass buffers, further aggravate undesirable conditions. The lack of buffers in waterways and around wetlands allows sediment from erosion to slowly fill the remaining wetlands. Pits originally used to capture gravity irrigation, pond rainwater in uplands rather than allowing water to filter down through the watershed. As a result, wetlands are drier for longer periods of time, relying on on-site moisture. Wetlands with fill and sediment may not pond water, even after heavy rainfall events, because most of the water is trapped within the organic soils, rather than ponding on top of hydric soils. Saturated soil conditions and changes in hydrology and hydroperiod create microclimates favorable to invasive species such as reed canary grass, hybrid cattail, and undesirable

tree species. Invasive species out compete important moist soil food plants, creating a monoculture of undesirable plants with little to no nutritional value for focal species.

Despite losses in wetland habitat, an estimated 8.6 million migratory waterfowl, including approximately 90% of the mid-continent white-fronted goose population, 50% of the mid-continent population of mallards, and 30% of the continent's northern pintail population, rely on the remaining 10% of all Rainwater Basin wetlands to provide the foraging and roosting habitat they need to complete their northward migration to the breeding grounds. Success on the breeding grounds has been directly correlated to the bird's body condition upon departure from the Rainwater Basin region and arrival to the breeding grounds. Therefore, remaining wetlands must provide enough wetland seed

resources, approximately 4.4 billion kilocalories annually, in addition to waste grains, for birds to build the necessary fat reserves for the remainder of their migration and to initiate nesting.

The Rainwater Basins are recognized as an internationally important spring staging area for waterfowl. However, located in the narrowest part of the Central Flyway, the Rainwater Basins not only host migratory waterfowl, but also provide roosting and foraging habitat for 600,000 shorebirds and a significant number of federally endangered whooping cranes. More than 30 species of shorebirds use Rainwater Basin wetlands and uplands including Baird's sandpiper, stilt sandpiper, lesser and greater yellowlegs, and nearly the entire population of buff-breasted sandpiper. Numerous wading birds, neotropical migratory birds, hundreds of species of plants,

butterflies, reptiles, amphibians, and mammals also use Rainwater Basin wetlands and their associated upland habitats.

The Rainwater Basin Focus Area is identified as an important migratory bird landscape in Nebraska's revised Legacy Plan. The Rainwater Basin is also identified in the North American Waterfowl Management Plan (NAWMP) as a waterfowl habitat area of major concern in North America and is recognized as the focal point of the Central Flyway spring migration corridor. In 1991, the NAWMP Committee officially recognized the Rainwater Basin as the 8th area in the United States to receive official Joint Venture status. The overall goal of the RWBJV is to restore and maintain sufficient wetland habitat in the Rainwater Basin to assist in meeting population objectives identified in the NAWMP (Gersib et al. 1992). Primary partners in the Rainwater Basin Focus Area include the RWBJV, NGPC, DU, Natural Resource Districts, Nebraska Environmental Trust (NET), NRCS, County Roads Departments, and numerous private landowners located throughout the region.

Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work cooperatively with private landowners and a diverse group of partners to restore, enhance, and manage wetland and upland habitat throughout the Rainwater Basin for the benefit of migratory waterbirds (waterfowl, wading birds, shorebirds) endangered species (e.g., whooping cranes), and grassland nesting birds. The Implementation Plan for the RWBJV (RWBJV 2013) identifies a need to restore and maintain sufficient wetland habitat in the Rainwater Basin area of Nebraska to assist in meeting population objectives in the NAWMP. The NE PFW program wetland, grassland, and watershed restoration and enhancement targets will assist in meeting the nutritional requirements of the millions of ducks and geese that use the Rainwater Basin each spring. Specific habitat actions include: (a) restoring wetland and watershed hydrology (silt removal, filling pits, plugging drains, installing low-level berms and water control structures); (b) removing and controlling invasive species (e.g., reed canary grass, undesirable

woody species, hybrid cattails); and (c) restoring and managing native grassland habitat (cropland conversion, reseeded, prescribed management).

Implementation Strategy For Partnership Objectives

NE PFW program will continue to focus its efforts on maintaining existing successful partnerships and develop new partnerships to restore wetland and upland habitat throughout the Rainwater Basin. New partners will primarily be landowners who have an interest in restoring and maintaining wetland and upland habitat. The PFW program will continue to provide a significant level of technical assistance to NRCS in the delivery of the ACEP –WRE and EQIP in this focus area. Staff will also work closely with employees from the RWBJV, NGPC, DU, and other groups and organization to assist in the delivery of habitat conservation programs. NE PFW program will continue to secure a high proportion of non-PFW program funding sources for Rainwater Basin wetland and upland habitat restoration projects.

Rainwater Basin Focus Area Focal Species

- Mallard
- Northern pintail
- Blue-winged teal
- Whooping crane (Endangered)
- Semipalmated sandpiper
- Least sandpiper
- Lesser yellowlegs
- Hudsonian godwit
- Grasshopper sparrow
- Sprague's pipit
- Monarch butterfly

Rainwater Basin Focus Area Habitat Targets

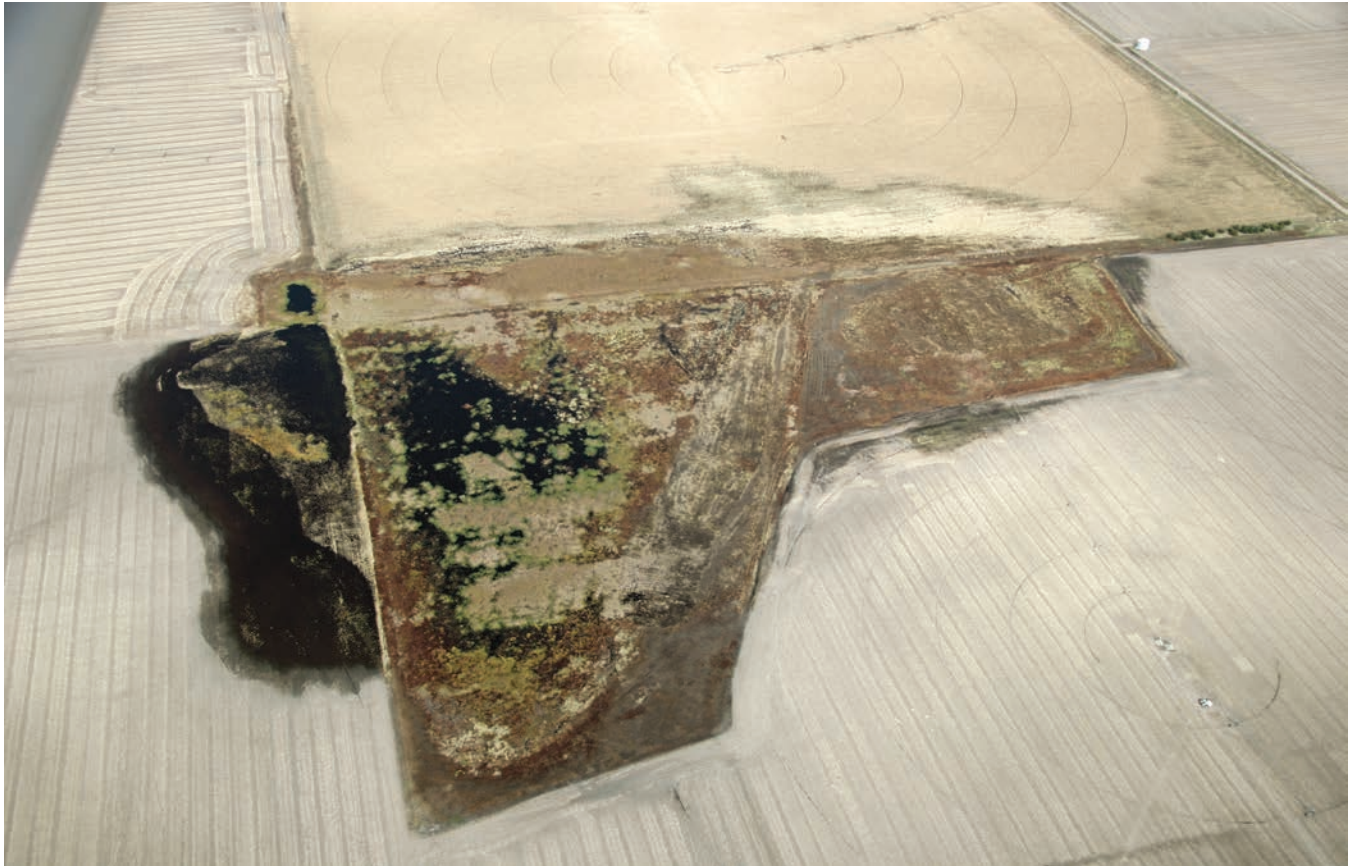
- Wetland Restoration/Enhancement: 1,750 acres
- Grassland Restoration/Enhancement: 250 acres
- Watershed Enhancement: 30 pit fills

Rainwater Basin Focus Area Partnership Targets

- Private Landowner Agreements: 40
- Partnerships: 240
- Technical Assistance: 600 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

Rainwater Basin Focus Area Related Plans

- Rainwater Basin Joint Venture Implementation Plan
- The Nebraska Natural Legacy Project
- North American Waterfowl Management Plan
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Partners in Flight – North American Landbird Conservation Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Platte/Kansas Rivers Ecosystem Plan
- Nebraska Wetlands Priority Plan



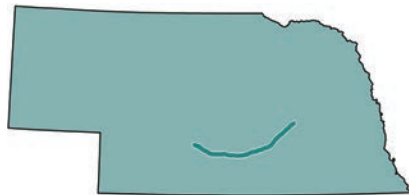
Aerial view of a Rainwater Basin wetland restoration project located in Nuckolls County, Nebraska. Restored wetland located on private lands (left side) adjacent to Smartweed Marsh Wildlife Management Area. USFWS photo.

Species Models And Decision Support Tools

Numerous habitat/species models and GIS land coverage databases have been developed for use in the Rainwater Basin. Below is a list of models/GIS land coverage databases, and other decision support tools that were used to help identify habitat targets for the Rainwater Basin Focus Area. These models along with other decision support tools will be used to prioritize habitat restoration projects for the target species.

- Rainwater Basin Wetland Complex Waterfowl Habitat Use Model
- Rainwater Basin Pit Fill Prioritization Model
- Whooping Crane Habitat Suitability Index Model for the Rainwater Basin
- Rainwater Basin Bio-Energetics Model
- Wetland Reserve Program Model

Central Platte River Focus Area



The Central Platte River Focus Area extends approximately 150 miles from Cozad to Clarks Nebraska. The combination of broad open river channels, its shallow braided character, adjacent wet meadows, and abundant food supplies attract millions of migratory birds each year. The central Platte River provides important habitat for fish and wildlife resources of national and international significance. The Central Platte River Focus Area has long been identified by conservation organizations and resource agencies as an area of significant biological importance and is identified as a biologically

unique landscape in Nebraska's Legacy Plan. A portion of this stretch of river is also the focus of the Platte River Recovery Implementation Program (PRRIP) which is a cooperative effort between the states of Nebraska, Colorado, Wyoming, and the Department of the Interior (DOI) to address water and habitat needs of four federally threatened and endangered species.

The Central Platte River is also considered to be one of the most endangered waterways in the United States. Open riverine channel and wet meadow grassland habitats for federally listed species (i.e., whooping cranes, interior least terns and piping plovers) shorebirds, waterfowl, and waterbirds have diminished over the decades. The Central Platte River provides both spring and fall migration habitat for the endangered whooping crane and a stretch of the river between Lexington and Shelton is identified



Sandhill cranes along the central Platte River in Hall County, Nebraska. Photo by Joe Milmoie, USFWS.

as critical habitat for whooping cranes. Its sandbars are breeding habitat for the threatened piping plover and endangered least tern. Millions of waterfowl utilize the shallow channels and associated wetlands for migration and wintering habitat. Over 300 bird species have been observed along the Platte River, and over 140 species are known to nest along the river. The Central Platte River also provides a variety of habitat types (e.g., backwaters, sloughs, side channels) for a diverse fish community. At least 37 species of fish are known to be found within the riverine habitats of the Central Platte River (e.g., western silvery minnow, plains topminnow, flathead chubs, and speckled chubs). The Central Platte River also provides habitat for numerous other wildlife species in decline or of significant importance including western prairie fringed orchids, monarch butterflies, regal fritillary butterflies, northern river otters, and numerous other wildlife species.

The Central Platte River hosts one of the greatest wildlife migration spectacles in the world. In late February through early April

approximately 500,000 sandhill cranes or 80% of the world's population converge on the Central Platte River for their annual spring staging event. Each bird spends approximately 2-3 weeks along the river resting, feeding and preparing for the long journey north to the breeding grounds. The Central Platte River is the spring staging area for sandhill cranes and is of ultimate importance to their ability to put on weight and successfully nest and reproduce young.

Grassland nesting birds, and other native fish and wildlife species have declined substantially throughout the central Platte River Basin during the last 100 years. The Platte River corridor once consisted of riverine and palustrine wetlands and associated grasslands located within the active floodplain adjacent to the channels of the river. The sparsely treed riparian areas along the river have gradually become forests dominated by cottonwoods, eastern redcedars, Russian olives and other unwanted woody species. An increase in scrub-shrub and forested areas has occurred at the expense of active open

riverine channel habitat, riverine wetland habitat (e.g., backwaters, sloughs, and side channels), and adjacent wet meadow/grassland habitat. A large percentage of open riverine/sandbar habitat (60-80%) and wet meadow habitat (55%) have been lost in the Central Platte River due to agricultural conversion, development, and hydrologic changes (Sidle et al. 1989). The remaining wet meadows and native grasslands are of diminished quality. Other threats to the habitats associated with the river include invasion of exotic species (e.g., phragmites, purple loosestrife, eastern redcedar, smooth brome, reed canary grass), gravel mining, and residential and commercial development. The NE PFW program and its Platte River partners have actively worked on over 200 projects throughout this focus area to restore and maintain riverine habitat for the target species. Primary partners in the Central Platte River Focus Area include the Crane Trust, Audubon's Rowe Sanctuary, NGPC, DU, TNC, NET, PPRI and numerous private landowners located along the central Platte River.

Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work with landowners along the Central Platte River and with key Platte River partners to restore, enhance, and manage the ecological functions and values of riverine/grassland habitat throughout this focus area. Specific habitat actions include: (1) restoring riverine backwater, wetland slough, and sandbar habitats; (2) clearing and controlling undesirable woody and other invasive vegetation from riverine and grassland habitats; (3) restoring and managing native wet meadow and grassland habitat by establishing diverse stands of native prairie plants; and (4) maintaining active riverine habitats by disking and mowing riverine channels, sandbars, and islands.

Implementation Strategy For Partnership Objectives

The PFW program will focus its efforts on developing new partnerships to restore riverine habitat throughout the Central Platte River. New partners will

primarily be landowners who are interested in restoring and maintaining riverine habitats for Federal Trust Species. NE PFW staff will work closely with the Crane Trust, NGPC, DU, Audubon, TNC, PPRI, and other groups and organizations to assist in the restoration of riverine habitats in a strategic manner. PFW will also provide technical assistance in the delivery of USDA conservation programs throughout the Platte River corridor. The program will continue to work with its Platte River partners to secure a high proportion of non-PFW program funding sources for Central Platte River habitat restoration projects.

Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species along the Central Platte River.

- Cooperative Whooping Crane Tracking Project GIS
- Whooping Crane Habitat Suitability Index Models
- Wet Meadow/Grassland GIS Land Coverage Databases
- Invasive Species GIS Land Coverage Database
- Central Platte River GIS Vegetative Mapping Database
- Sandhill Crane Surveys and Distribution Maps
- Least Tern and Piping Plover Surveys



Riverine slough restoration project completed along the central Platte River in Merrick County, Nebraska. Photo by Kirk Schroeder, USFWS.

Central Platte River Focus Area Focal Species

- Northern pintail
- Sandhill crane
- Whooping crane (Endangered)
- Least tern (Endangered)
- Piping plover (Threatened)
- Lesser yellowlegs
- Upland sandpiper
- Henslow's sparrow
- Grasshopper sparrow
- Plains topminnow
- Cylindrical papershell mussel
- Monarch butterfly
- Regal fritillary butterfly

Central Platte River Focus Area Habitat Targets

- Riverine Roosting Habitat Restoration/Enhancement: 5 miles
- Riverine Slough and Backwater Habitat Restoration: 5 miles
- Upland Grassland Restoration/Enhancement: 1,000 acres
- Wetland/Wet Meadow Restoration/Enhancement: 1,000 acres

Central Platte River Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 150
- Technical Assistance: 250 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

Central Platte River Focus Area Related Plans

- The Nebraska Natural Legacy Project
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Partners in Flight – North American Landbird Conservation Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Habitat Management, Restoration, and Acquisition Plan for the Big Bend Reach of the Platte River in Central Nebraska
- Platte River Recovery Implementation Program
- Whooping Crane Recovery Plan
- Great Lakes and Northern Great Plains Piping Plover Recovery Plan
- Recovery Plan for the Interior Population of the Least Tern
- Western Prairie Fringed Orchid Recovery Plan
- Platte/Kansas Rivers Ecosystem Plan
- Nebraska Wetlands Priority Plan
- 2016 Monarch Conservation Implementation Plan

Sandhills Focus Area



The Sandhills of Nebraska is a 19,600 square-mile sand dune formation covered by native grasses in north-central Nebraska. The Sandhills represents the largest contiguous tract of grassland remaining in the United States and the largest stabilized sand dune area in the Western Hemisphere. The hydrology associated with these sand dunes has created a vast groundwater reservoir and 1.3 million acres of wetlands. The Sandhills as a whole contain over 1.1 million acres of palustrine and riverine wetlands, 85,000 acres of lacustrine wetlands, and over 11.5 million acres of grasslands. This high

wetland to grassland ratio (1:10 acres) provides excellent habitat for resident and migratory wildlife and the abundance of wetlands and grasslands makes the area important to both wildlife and ranching. Ranching is the primary economic use, with approximately 94% of the land in private ownership.

The Sandhills landscape contains abundant lakes, wetlands, wet meadows, and spring fed streams that are surrounded by a sea of grassland. The Sandhills are identified in the North American Waterfowl Management Plan as a waterfowl habitat area of major concern in North American and are considered to be the best duck production area south of the Prairie Pothole Region. The majority of



Nebraska PFW stream habitat restoration project located in the Sandhills Focus Area. The Sandhills are made up of vast native grasslands that support viable agriculture and wildlife. USFWS Photo.



Sandhills Task Force Board and support staff during a strategic planning meeting held in Thedford, Nebraska. Photo by Kyle Graham, USFWS.

the High Plains flock of Trumpeter swans nest on larger lakes found in the Sandhills and the wet meadows and associated grasslands provide vital nesting habitat for an estimated 4 million grassland birds (RWBJV 2013), including large populations of sharp-tailed grouse and greater prairie-chickens. The Sandhills Focus Area encompasses numerous biologically unique landscapes (e.g., Cherry County Wetlands, Sandhills Alkaline Lakes, Dismal Headwaters, Elkhorn Headwaters, Upper Loup Rivers and Upper Niobrara River) identified in Nebraska's comprehensive wildlife action plan. In 1991, a sixteen member task force was formed known as the Sandhills Task Force (STF). This group is made up of local Sandhills ranchers and representatives from the Service, NGPC, NRCS, Nebraska Cattlemen, Nebraska Land Trust, and University of Nebraska Lincoln Extension. The goal of the STF is to work cooperatively with state and federal conservation agencies, non-government organizations, and Sandhills landowners to enhance the natural resources in the Sandhills by supporting wildlife and profitable ranching.

The Sandhills remain as one of the best examples of a functioning prairie landscape in the country. Approximately 700 native plant species have been documented,

including several at-risk species such as blowout penstemon, western prairie-fringed orchid, marsh marigold, and bog bean. The area provides habitat for 55 species of mammals, 75 species of fish, and 27 species of amphibians and reptiles. Over 300 species of resident and migratory birds have been documented, including large numbers of waterfowl, shorebirds, wading birds, and other wetland and grassland dependent species. The Sandhills are considered to be an important breeding site for many native nesting birds including: sharp-tailed grouse, greater prairie-chicken, long-billed curlew, upland sandpiper, vesper sparrow, lark bunting, grasshopper sparrow, western meadowlark, American avocet, trumpeter swan, black tern, ferruginous hawk, and numerous species of ducks. Some of the major threats to the Sandhills include wetland/wet meadow degradation, aquatic invasive species, and eastern redcedar encroachment. The wetland/wet meadow degradation is caused by small surface drains created decades ago (to facilitate additional haying acres) that have eroded to large ditches and have negatively affected hydrologic function. These larger, incised ditches ultimately lower the groundwater table, affecting the presence of wetland and grassland plants associated with a higher groundwater table. This lower

water table and lack of wet meadow habitat significantly impacts focal species such as the long-billed curlew, trumpeter swan, and whooping crane along with other wetland dependent species. Aquatic invasive species, like the common carp, also negatively impact wetland habitats. When large numbers of carp occur in wetlands and lakes, habitat and water quality are negatively affected resulting in a reduction in use by waterfowl, shorebirds, and other wetland dependent birds and native aquatic species.

The encroachment of eastern redcedar is a growing threat to the health of Sandhills grassland nesting birds and the ranching community. Naturally occurring grassland fires were a common ecological force that shaped and preserved Sandhills grasslands and limited the spread of invasive species like cedars. The spread of cedars has a spiraling effect. As cedar increases, more bare soil occurs, encouraging more tree germination. From a ranching standpoint, the encroachment of cedar leads to loss in profitability to the rancher due to the lack of available grasses leading to lower stocking rates and shorter grazing periods. If grazing pressure remains the same, it too reduces plant composition, bares more soil, and encourages more tree growth. Mechanically

removing cedar and integrating prescribed management will allow native grasslands to become re-established and continue to support profitable ranching.

The NE PFW program and its Sandhills partners have worked with approximately 200 landowners throughout this focus area to restore and enhance wetland, riparian, stream, and native grassland habitats. Major partners in this focus area include numerous Sandhill ranchers, STF, NGPC, NET, NRCS, National Fish and Wildlife Foundation (NFWF), local Natural Resource Districts, Nebraska Cattlemen, Weed Management Areas, Nebraska Land Trust, and TNC.

Implementation Strategy For Habitat Objectives

The STF has been a key partner in the successful delivery of the PFW program throughout the focus area over the past 20 years. PFW program staff will continue to cooperatively work with the STF and its diverse group of partners to work with ranchers to restore and enhance wetland, lake, riparian, stream, and native grassland

habitat throughout this focus area. Specific habitat actions include developing and implementing grazing management plans and wetland, riparian, and stream restorations projects throughout high priority areas. These projects will be conducted to enhance the wetland-grassland ecosystem in a way that sustains wildlife and plant diversity.

Implementation Strategy For Partnership Objectives

NE PFW will focus its efforts on maintaining existing partnerships and developing new partnerships to enhance and restore wetland and grassland habitat throughout the area. New partners will primarily be ranchers and other private landowners who are interested in enhancing this unique ecosystem for both Federal Trust Species and the local ranching community. Program staff will continue to work closely with the STF, NGPC, and other groups and organizations to assist in the restoration of wetland, upland, and stream habitats. In addition, the program will continue to provide technical assistance in the delivery of NRCS conservation programs. The staff will work

with partners to secure a high proportion of non-PFW program funding sources for habitat restoration and enhancement projects.

Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Sandhills.

- Trumpeter Swan Landscape – Level Habitat Use Model for the Sandhills
- Prairie Grouse Habitat Use Models
- American Burying Beetle Habitat Use Model – Sandhills
- Long Billed Curlew Habitat Suitability Model
- Cooperative Whooping Crane Tracking Project GIS
- Sandhills Wetland Complex Model
- Wet Meadow/Grassland GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database



Sandhills wetland and grassland habitat project located in Cherry County, Nebraska. Photo by Kenny Dinan, USFWS.

Sandhills Focal Species

- Trumpeter swan
- Northern pintail
- Long-billed curlew
- Greater prairie-chicken
- American avocet
- Upland sandpiper
- Grasshopper sparrow
- Whooping crane (Endangered)
- American burying beetle (Endangered)
- Western prairie fringed orchid (Threatened)
- Blowout penstemon (Endangered)
- Regal fritillary butterfly

Sandhills Focus Area Habitat Targets

- Stream/Riparian Habitat Restoration/Enhancement: 15 miles
- Grassland Habitat Restoration/Enhancement: 20,000 acres
- Wetland/Wet Meadow/Lake Restoration/Enhancement: 2,500 acres

Sandhills Focus Area Partnership Targets

- Private Landowner Agreements: 30 landowners
- Partnerships: 180
- Technical Assistance: 450 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

Sandhills Focus Area Related Plans

- Sandhills Management Plan
- Nebraska Natural Legacy Project
- North American Waterfowl Management Plan
- Ducks Unlimited Nebraska Conservation Plan
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Platte/Kansas Rivers Ecosystem Plan
- Partners in Flight – North American Landbird Conservation Plan
- Nebraska Wetlands Priority Plan
- RWBJV Implementation Plan

North Platte River Focus Area



The North Platte River is the lifeblood for a large portion of western Nebraska. Dozens of communities, thousands of farmers, ranchers, and recreationists, and millions of individual plants and animals depend on and utilize the river and its associated habitats. Historically, this river system was a shallow, wide, braided stream that was relatively devoid of trees. Floods, fires, and large ungulate grazing maintained the habitats associated with the river. These habitat types include wet meadows, freshwater and alkaline wetlands, river channels, backwater sloughs, oxbows, sandbars, riverine islands and other riparian habitats. These habitat communities host a diverse assemblage of wildlife and plant species. Over 225 migratory bird species including three federally listed species (whooping crane,

least tern, piping plover), an estimated 2 million ducks, 500,000 geese, and over 60,000 sandhill cranes use the North Platte River for breeding, wintering, and spring and fall migration stopover habitat. Hundreds of invertebrate and vertebrate species including everything from tiger beetles, dragonflies, and butterflies to the state listed northern river otter, deer, turkey, and quail also call these riverine habitats home.

The wetlands and uplands associated with the North Platte River have become increasingly degraded over time, making them of reduced quality and availability to wildlife species and private landowners alike. Degrading factors include drainage of wetlands and conversion to alternate land uses; depletion of flows due to upstream impoundments, drought, flow diversion, and groundwater decline; loss of periodic flooding events; and the establishment of invasive species. River channels and adjacent wetlands have narrowed and become heavily dominated by invasive and undesirable woody and herbaceous vegetation. Wet meadows, riparian grasslands,

river islands, and sandbars have also become heavily wooded or infested with invasive herbaceous species. The overabundance of woody vegetation and loss of native plant communities has limited the ability of private landowners to effectively graze livestock or hay grasslands, both of which are vitally important for land and habitat management.

Both private landowners and conservation partners are actively engaged in numerous conservation activities to restore these important habitats. Partners including (but not limited to) DU, NGPC, NET, PRBE and NRCS, in conjunction with the PFW program, are actively engaged with private landowners for restoration activities including invasive and undesirable woody species removal, backwater and riverine slough restoration, and native prairie establishment. Over 150 habitat projects have occurred within the focus area. The North Platte River falls into two biologically unique landscapes as identified in the Nebraska Legacy Plan (North Platte River Wetlands, Platte Confluence).



*Riverine slough restoration project completed along the North Platte River in Lincoln County, Nebraska.
Photo by Emily Munter, USFWS.*

Implementation Strategy For Habitat Objectives

The NE PFW program will work with landowners and its North Platte River conservation partners to restore and enhance riverine/grassland habitat. Specific habitat actions include: (1) clearing Russian olive, eastern redcedar, phragmites, and other undesirable and invasive woody and herbaceous vegetation from riverine habitats; (2) restoring backwater and riverine sloughs, and other wetlands through mechanical removal of silt, sediment, and invasive vegetation; and (3) restoring floodplain wet meadow/grasslands by clearing invasive vegetation, renovating wetlands, and developing haying and grazing management systems to re-establish and maintain diverse stands of native prairie plants.

Implementation Strategy For Partnership Objectives

A primary emphasis of the program will be to ensure that existing successful partnerships

are maintained and that new partnerships to restore riverine wetland and upland habitat throughout this focus area are formed. New partners will primarily be North Platte River landowners who are interested in restoring and maintaining riverine habitats for Federal Trust Species. PFW program staff will continue to work closely with partners to assist in the delivery of habitat projects on private lands throughout the North Platte River valley. PFW program staff will continue to provide a significant level of technical assistance to NRCS in the delivery of ACEP – WRE and EQIP in this focus area. The program will continue to secure a high proportion of non-PFW funding sources for North Platte riverine wetland and upland habitat restoration projects.

Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat

restoration projects for the target species throughout the North Platte River valley.

- Wet Meadow/Grassland GIS Land Coverage Databases
- North Platte River GIS Vegetative Mapping Database
- Trumpeter Swan Landscape – Level Habitat Use Model
- Prairie Grouse Habitat Use Models
- Eastern Redcedar GIS Land Coverage Database
- Playa Lakes Joint Venture HABS Database
- Species for Management Database
- Integrated Monitoring in Bird Conservation Region Program
- Cooperative Whooping Crane Tracking Project GIS
- Sandhill Crane and Waterfowl Surveys and Habitat Use Decision Support System
- Least Tern and Piping Plover Surveys

North Platte River Focus Area Focal Species

- Mallard
- Northern pintail
- Trumpeter swan
- Sandhill crane
- Whooping crane (Endangered)
- Upland sandpiper
- Grasshopper sparrow
- Monarch butterfly
- Regal fritillary
- Plains tominnow

North Platte River Focus Area Habitat Targets

- Riverine Slough and Backwater Habitat Restoration: 10 miles
- Riverine In-Channel Habitat Restoration/Enhancement: 10 miles
- Wetland/Wet Meadow Restoration/Enhancement: 1,500 acres
- Upland Restoration/Enhancement: 500 acres

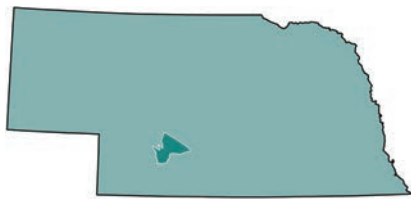
North Platte River Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 150
- Technical Assistance: 375 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

North Platte River Focus Area Related Plans

- Nebraska Natural Legacy Project
- Ducks Unlimited Nebraska Conservation Plan
- Ecoregion-Based Conservation in the Central Shortgrass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Platte/Kansas Rivers Ecosystem Plan
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Nebraska Wetlands Priority Plan
- Crane Status Survey and Conservation Action Plan
- Playa Lakes Joint Venture Area Implementation Plan (BCR 18)
- Landscape Conservation Cooperatives Network Strategic Plan

Loess Canyons Focus Area



The Loess Canyons Focus Area of southwest Nebraska is an approximately 485,000-acre landscape comprised of rolling hills of mixed-grass prairie dissected by steep canyons. Lying along the south side of the Platte River Valley, the Loess Canyons are named after the loess soils found in the area, and the predominant land use is livestock grazing with interspersed small crop fields and hay meadows. The prairies of the Loess Canyons have been severely degraded by a growing infestation of invasive tree species, primarily eastern redcedar. In 2010, an estimated 36% of the landscape had been lost to cedar forest, and further estimations range from 3% to 8% of the grasslands of the landscape succumbing to cedar encroachment annually. An additional degrading factor is the presence of exotic cool-season

grasses, including Downy brome, Japanese brome, smooth brome, and Kentucky bluegrass. Despite the dramatic landscape changes, the Loess Canyons provide important habitat for hundreds of species of migratory and resident wildlife, including providing habitat for the largest known population of the federally listed American burying beetle. Other species include the western meadowlark, grasshopper sparrow, northern bobwhite, greater prairie-chicken, monarch butterfly, and Rocky Mountain elk.

Based on input received from our stakeholders from the Loess Canyons area we expanded the boundary of this focus area to the south and west. The landscape within the expansion area is topographically similar and includes rolling to steep hills and canyons predominated by loess mixed-grass prairie. The landscape is primarily rangeland with interspersed dryland and irrigated cropland. The habitat threats and stressors are consistent with the original focus area. Expanding efforts into this area at this time provide a unique opportunity to proactively approach redcedar

removal before densities (and associated treatment costs) increase. Benefiting species would be similar to the original focus area and include greater prairie-chicken, Swainson's hawk, Bell's vireo, grasshopper sparrow, western meadowlark, monarch butterfly, northern bobwhite, and numerous other grassland dependent Federal Trust Species.

Successful partnerships within the Loess Canyons have resulted in the PFW program working with over 80 landowners to restore native prairie for both sustainable ranching and Federal Trust Species. Habitat actions include mechanical removal of invasive trees, establishing firebreaks for prescribed burning activities, and developing grazing management plans to combat exotic cool-season grasses. A particularly important effort, prescribed burning for initial eastern redcedar removal and for subsequent grassland management, is being led by a unique group of landowners called the Loess Canyons Rangeland Alliance. This coalition of landowners successfully burns thousands of acres annually and has been recognized nationally for their accomplishments.



The Loess Canyons Prairie landscape is being invaded by eastern redcedar. Picture of PFW Loess Canyon project before restoration, Lincoln, County, Nebraska. Photo by Joe Milmoie, USFWS.

Additional partners within the focus area include the NGPC, PF, Quail Forever (QF), NRCS, Twin Platte NRD, NET, Rocky Mountain Elk Foundation (RMEF), National Wild Turkey Federation (NWTf), and the newly establishing Upper Medicine Creek Prescribed Burn Association. The Loess Canyons is also identified as a biologically unique landscape in the Nebraska Legacy Plan.

Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work with its Loess Canyons partners to control invasive species, improve native prairie vegetative and structural diversity, and promote improvement in overall biodiversity by restoring and enhancing important habitats throughout this area. Specific habitat actions include: (1) clearing eastern redcedar and other undesirable invasive vegetation from grassland habitats; (2) implementing planned grazing systems to reduce exotic cool-season grasses and improve

native plant diversity and vigor; and (3) maintaining restored areas through the use of prescribed management.

Implementation Strategy For Partnership Objectives

NE PFW program staff will continue to work with its partners to develop and implement habitat restoration projects on private lands throughout this area. New partners will primarily be landowners who value grassland habitats. Along with financial assistance, the program will provide technical assistance to our conservation partners in their efforts to deliver habitat projects throughout this focus area. A primary emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland habitats for Federal Trust Species. The PFW program will continue to provide technical assistance towards the implementation of EQIP and CSP within the focus area. The program will continue to seek a high proportion of non-PFW program

dollars for restoration projects.

Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Loess Canyons.

- Loess Canyons GIS Vegetative Mapping Database
- Prairie Grouse Habitat Use Models
- Eastern Redcedar GIS Land Coverage Database
- Nebraska Bird Partnership HABS Model/Databases
- American Burying Beetle Habitat Use Model – Loess Canyons
- Integrated Monitoring in Bird Conservation Regions Program
- North American Breeding Bird Survey Database



Mechanical removal of eastern redcedar on a ranch in the Loess Canyons Focus Area in Lincoln County, Nebraska. USFWS photo.

Loess Canyons Focal Species

- American burying beetle (Endangered)
- Greater prairie-chicken
- Swainson's hawk
- Northern harrier
- Upland sandpiper
- Bell's vireo
- Grasshopper sparrow
- Monarch butterfly
- Regal fritillary butterfly

Loess Canyons Focus Area Habitat Targets

- Upland Restoration/Enhancement: 10,000 acres

Loess Canyons Focus Area Partnership Targets

- Private Landowner Agreements: 25 landowners
- Partnerships: 75
- Technical Assistance: 250 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

Loess Canyons Focus Area Related Plans

- Nebraska Natural Legacy Project
- Conservation Plan for the Loess Canyons Biologically Unique Landscape
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- The Recovery Plan for the American Burying Beetle



Central Loess Hill/Loup Rivers landscape with a Nebraska PFW program invasive species control project ongoing in the foreground. Photo by Kirk Schroeder, USFWS.

Central Loess Hills and Loup Rivers Focus Area



The Central Loess Hills and Loup Rivers Focus Area is located in the mixed-grass prairie ecoregion of Nebraska. This area extends from the Sandhills south to the Platte River valley. The Loess Hills and Lower Loup Rivers are identified as biologically unique landscapes identified in Nebraska's Legacy Plan and contain significant biological resources of federal and state concern.

The Central Loess Hills consist of rolling to steep loess hills dissected by the valleys of the Loup Rivers. Portions of the Central Loess Hills have been heavily invaded by eastern redcedar and

exotic cool-season grasses. The Central Loess Hills landscape provides important habitat for hundreds of species of plants, state and federally listed species, grassland nesting birds, migratory waterbirds, insects, reptiles, amphibians and mammals. Playa wetlands are scattered throughout the flat tablelands of the Central Loess Hills and are used by whooping cranes and numerous species of waterbirds during migration. The Central Table Playa wetland complex includes a series of shallow playa wetlands located in portions of Custer, Dawson, Lincoln, and Logan counties. The grasslands associated with this area are significant habitat for monarch and regal fritillary butterflies and contain one of the largest populations of greater prairie-chickens in the state of Nebraska.

The Loup Rivers Focus Area includes reaches of the Middle Loup, North Loup and South Loup rivers. The Loup rivers originate

from springs within the Sandhills and maintain a fairly constant year-round flow. The Loup Rivers contain important habitats for a diverse group of wildlife species. Wet meadows, palustrine/riverine wetlands, river channels, backwater sloughs, oxbows, and sandbars provide important habitats for migrating, wintering, and breeding waterbirds; grassland nesting birds; federal and state threatened and endangered species (e.g., whooping cranes, least terns, piping plovers, western prairie fringed orchids, white lady's slipper); and numerous other wetland/riverine-dependent species. Riverine wetlands located throughout the valleys also provide important habitat for numerous species of other plants, amphibians, reptiles, and mammals including the state listed northern river otter. The most extensive populations of small white lady's slippers in Nebraska are found within the wet meadows associated with the Loup River system.

The overall goal for this focus area is to work with private landowners to restore and enhance grassland and wetland habitats for Federal Trust Species found throughout the Loess Hills, Central Table Playas, and the Lower Loup rivers. Primary partners in the Central Loess Hills and Loup Rivers Focus Area include numerous private landowners, NGPC, PF, QF, DU, NRCS, NWTF, RWBJV and the NET.

Implementation Strategy For Habitat Objectives

The NE PFW program will work with its partners to control invasive species, improve grassland conditions, and to promote biodiversity by restoring and enhancing important habitats throughout this area. Specific habitat actions include: (1) clearing eastern redcedar and other undesirable invasive vegetation from grassland habitats; (2) implementing planned grazing systems to reduce exotic cool-season grasses and improve native plant diversity and vigor; and (3) restoring hydrology to playa and riverine wetlands.

Implementation Strategy For Partnership Objectives

NE PFW program staff will continue to work with its partners to develop and implement habitat restoration projects on private lands throughout this area. New partners will primarily be landowners who value grassland, wetland, and riparian habitats. Along with financial assistance, the PFW program will provide technical assistance to our other conservation partners in their efforts to deliver habitat projects throughout this focus area. A primary emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland, wetland, and riverine habitats. A high proportion of non-PFW program funding sources will be secured for Central Loess Hills and Loup River Systems Focus Area habitat restoration projects

Habitat/Species Models And Decision Support Tools

Below is a list of models/GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Loess Hills and Loup Rivers Focus Area.

- Prairie Grouse Habitat Use Models
- Whooping Crane Habitat Use Models
- Cooperative Whooping Crane Tracking Project GIS
- Central Table Playas Wetland/ Waterfowl Model
- Wet Meadow/Grassland GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database
- Nebraska Bird Partnership HABS Model/Databases

Central Loess Hills and Loup Rivers Focal Species

- American wigeon
- Northern pintail
- Greater prairie-chicken
- Whooping crane (Endangered)
- Least terns (Endangered)
- Western prairie fringed orchid (Threatened)
- Upland sandpiper
- Grasshopper sparrow
- Plains topminnow
- Monarch butterfly
- Regal fritillary butterfly

Central Loess Hills and Loup Rivers Focus Area Five-year Targets

- Upland Grassland Restoration/Enhancement: 2,500 acres
- Wetland/Wet Meadow Restoration/Enhancement: 500 acres
- Riverine Habitat Restoration (sloughs and backwaters): 3 miles

Central Loess Hills and Loup Rivers Focus Area Partnership Targets

- Private Landowner Agreements: 15
- Partnerships: 90
- Technical Assistance: 150 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

Central Loess Hills and Loup Rivers Focus Area Related Plans

- Nebraska Natural Legacy Project
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- Ducks Unlimited Nebraska Conservation Plan
- 2016 Monarch Conservation Implementation Plan

Eastern Tallgrass Prairie Focus Area



The Tallgrass Prairie Ecoregion covers the eastern fourth of Nebraska; however, only approximately two percent of Nebraska's tall-grass prairies remain, with most remnant prairies being less than eighty acres in size. Threats of fragmentation, lack of fire, conversion to cropland, and invasive tree encroachment are major concerns for Nebraska's eastern tallgrass prairies. The remaining prairies are being severely degraded by a growing infestation of invasive tree species, primarily eastern redcedar. An additional degrading factor is the presence of exotic cool-season grasses, including smooth brome, and Kentucky bluegrass. Invasive tree removal, implementing planned grazing strategies, increasing the use of prescribed fire, and increasing monarch and other pollinator habitats are major conservation priorities for this area.

The NE PFW program's Eastern Tallgrass Prairie Focus Area includes three high priority biologically unique landscapes identified in Nebraska's Legacy Plan. This focus area includes the Sandstone Prairies, Southeast Prairies, and the Verdigre-Bazile Creek Watershed, all located in the Tallgrass Prairie Ecoregion of Nebraska. The Sandstone Prairies and Southeast Prairies include the bluffs and breaks along the Little Blue River and Rose Creek in Jefferson and Thayer counties and the rolling hills portions of Richardson, Pawnee, Johnson, and Gage counties. The Verdigre-Bazile Creek Watershed includes the watershed of the Verdigris and Bazile creeks in Cedar, Knox, Holt, and Antelope counties. The northern portion of this focus area also includes the Missouri River and its associated habitats. In



View of a habitat restoration project within the Eastern Tallgrass Prairie Focus Area. Eastern redcedar and other invasive woody species were removed and a prescribed grazing and patch burning management plan were implemented. Photo by Kent Pfieffer, Nebraska Game and Parks Commission/ Northern Prairies Land Trust.

addition, this focus area includes the land that lies within the confluence of the Verdigre-Bazile, Lower Niobrara, and Missouri rivers and includes a portion of eastern Boyd County.

This focus area provides important habitat for hundreds of species of migratory and resident wildlife, including Henslow's sparrow, eastern meadowlark, grasshopper sparrow, northern bobwhite quail, greater prairie-chicken, and the monarch and regal fritillary butterfly. This focus area is also located within the Service monarch butterfly national conservation priority area. Primary partners in the Eastern Tallgrass Prairie Conservation Focus Area include the NGPC, NPLT, NET, NRCS, Audubon Nebraska, and numerous private landowners located throughout the Eastern Tallgrass Prairie Focus Area.

Implementation Strategy For Habitat Objectives

The NE PFW program will continue to work with its partners to control invasive species, restore and improve native grassland conditions, and to promote biodiversity by restoring and enhancing important habitats throughout this focus area.

Specific habitat actions include: (1) removing invasive species (e.g., eastern redcedar, smooth brome, Kentucky bluegrass); (2) facilitating landscape scale increases in heterogeneity by implementing innovative management strategies made possible by the removal of trees; (3) improve habitat conditions on large tracts of intact grassland by reducing fragmentation; (4) demonstrating sustainable management of grasslands and associated native woodlands; and (5) restoring native plant communities by improving native plant diversity and vigor. Additional opportunities may arise to work with our partners to restore riverine backwater, wetland slough, and other riverine (e.g., river channels, sandbars, islands, riparian) and palustrine wetland habitats along the lower Niobrara and Missouri Rivers.

Implementation Strategy For Partnership Objectives

NE PFW staff will work with its partners to develop and implement habitat restoration projects on private lands throughout this focus area. New partners will primarily be landowners located throughout this landscape who are interested in restoring and maintaining native grassland habitats for Federal

Trust Species. Along with financial assistance, PFW will also provide technical assistance for habitat projects. Emphasis will be placed on assisting private landowners with removing invasive species and restoring grassland and wetland habitats. A high proportion of non-PFW funding sources will be secured for habitat restoration projects throughout this focus area.

Habitat/Species Models And Decision Support Tools

Following is a list of models/ GIS land coverage databases and other decision support tools that will be used to prioritize habitat restoration projects for the target species throughout the Eastern Tallgrass Prairie Focus Area.

- Greater Prairie-Chicken Habitat Use Models
- Grassland/Wet Meadow GIS Land Coverage Databases
- Eastern Redcedar GIS Land Coverage Database
- Invasive Species GIS Land Coverage Database
- Massasauga Habitat Use Data
- Nebraska Bird Partnership HABS Model/Databases

Eastern Tallgrass Prairie Focus Area Focal Species

- Greater prairie-chicken
- Upland sandpiper
- Grasshopper sparrow
- Henslow's sparrow
- Monarch butterfly
- Regal fritillary butterfly
- Western prairie fringed orchid (Threatened)

Eastern Tallgrass Prairie Focus Area Habitat Targets

- Upland Grassland Restoration/Enhancement: 7,500 acres

Eastern Tallgrass Prairie Focus Area Partnership Targets

- Private Landowner Agreements: 25
- Partnerships: 75
- Technical Assistance: 125 staff days
- Percentage of Leveraging: 70% or more of non-PFW program sources

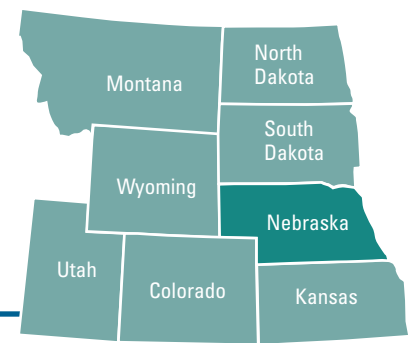
Eastern Tallgrass Prairie Focus Area Related Plans

- Nebraska Natural Legacy Project
- Partners in Flight – North American Landbird Conservation Plan
- Terrestrial Natural Communities of Nebraska
- Conserving the Biological Diversity of the Central Mixed-Grass Prairie
- Conservation in a Highly Fragmented Landscape: the Central Tallgrass Prairie Ecoregional Conservation Plan
- 2016 Monarch Conservation Implementation Plan



Native prairie restoration projects provide a win-win for cattle producers and wildlife conservationists. USFWS Photo.

Nebraska Statewide Goals



Improve Information Sharing and Communication

Effective internal and external communication and collaboration continues to be critical to the success of the NE PFW program. An overarching objective of the program is to maintain and enhance communication and collaboration with our diverse group of internal and external partners. Information sharing and communication is an essential part of conservation and NE PFW program staff will continue to make efforts to increase awareness of the PFW program and the Service's mission, while informing the public of the importance of conserving species and habitats on private lands.

Five-year Targets

- Actively participate in 50 landowner/watershed meetings, site visits, conferences and/or workshops.
- Make 25 presentations at local, state, and national meetings, conferences, and workshops.
- Conduct 75 field tours and site visits to habitat restoration projects throughout the state to exchange information regarding restoration techniques and funding opportunities.
- Participate in five congressional staff meetings regarding the NE PFW program.
- Actively participate in the USDA NRCS technical committee, USDA conservation program sub-committees, and ACEP-WRE Program Bio-Engineering Teams.
- Continue to coordinate with the NGPC to deliver habitat restoration projects on private lands throughout our conservation focus areas and meet annual with NGPC Partners Section staff.
- Collaborate and coordinate with the Nebraska Ecological Services Field Office, Refuge offices located throughout Nebraska and the RWBJV Office.
- Continue to improve communications with our partners by maintaining a strong presence in a wide variety of work groups and committees and participate with numerous Nebraska stakeholders in the development of strategic landscape planning efforts throughout Nebraska.
- Conduct 10 events that connect children with nature (i.e. community outreach events, presentations, outdoor classrooms, 4-H, Scouts, BioBlitz, MONA Crane Days, Range Camps, etc.).



Private Lands Partners Day conference hosted by the PFW program, Sandhills Task Force, and Partners for Conservation in North Platte, Nebraska, during September 2015. Photo by Kirk Schroeder, USFWS.



Nebraska PFW program biologist, Emily Munter connecting children with nature during 2016 BioBlitz event held at Enders Reservoir in Chase County, Nebraska.

Enhance Our Workforce

The NE PFW program fully funds five full-time private lands biologist (including the State Coordinator). PFW program private lands biologists are extremely dedicated to working with private landowners and our partners to restore Federal Trust Species on private lands. In order to maintain a high level of professionalism and to better accomplish the Service's goal of conserving fish, wildlife, plants and their habitats, NE PFW program staff will continue to participate in numerous training opportunities (e.g., formal training, workshops, seminars, conferences), to improve program operations (habitat restoration techniques, GIS, partnership development), and to improve career opportunities (research, evaluation, communication, policy). In addition, program staff will have an opportunity to spend time working with other program biologist outside of their primary areas of responsibility to share ideas, methods, and build support and understanding regarding what is occurring in other parts of the state, region, and country. The success of our efforts to meet our five-year habitat targets throughout Nebraska's conservation focus area is highly dependent on our ability to maintain a highly effective workforce and to provide both financial (dirtwork funds) and technical support (staffing) to our partners throughout our conservation focus areas.

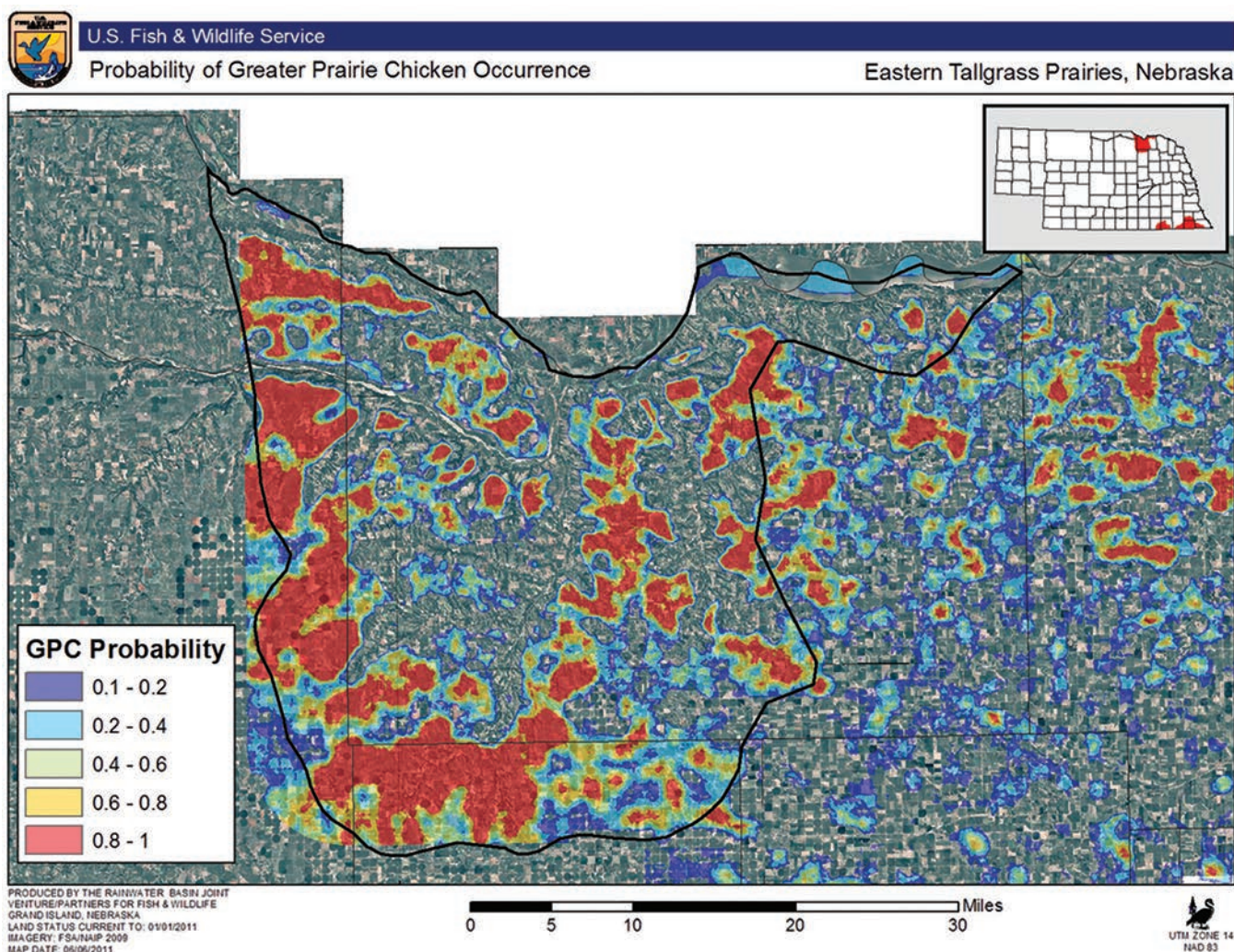
Five-year Targets

- NE PFW program staff will attend a minimum of 40 hours of training annually. (e.g., formal training, workshops, seminars, conferences, work details, program meetings and conference calls, required training, etc.).

- NE PFW program staff will spend 40 hours/year in another PFW biologist's area (within or outside of Nebraska) to exchange techniques, ideas and address challenges.
- Maintain a highly-skilled and highly-motivated NE PFW program staff.
- Maintain close coordination, at least biweekly, among the NE PFW program state coordinator, assistant state coordinator and program staff.
- In accordance with the Service's Employee Performance Appraisal System, performance and special achievement awards will be used to recognize exceptional projects and achievements.



Nebraska PFW program conducted a field tour and wetland training session with PFW biologists, Pheasants Forever Farm Bill biologists, and NRCS staff along the central Platte River and Rainwater Basin Focus Areas. Photo by Kelsi Wehman, Pheasant Forever.



Maps and decision support tools such as this are being developed by the Rainwater Basin Joint Venture and others and provide valuable input when prioritizing landscapes within NE PFW focus areas. This map/model depicts the highest priority grasslands for greater prairie-chicken conservation in the Verdigre-Bazile Creek Watershed.

Increase Accountability

The NE PFW program State Coordinator will continue to serve as project officer and fiduciary for all PFW program funds. These include Private Landowner Agreements, Cooperative Agreements, grants and other funding agreements. The State Coordinator will also continue to work closely with the Nebraska Ecological Services Field Office's Administrative Officer, Regional Office staff, and NE PFW program staff, to ensure that all appropriate procedures and guidelines are followed and necessary paperwork is completed for projects.

The NE PFW program will use many factors in prioritizing projects under this strategic plan. To ensure habitat restoration projects provide the greatest biological benefit for Federal Trust Species, NE PFW personnel will use habitat/species models, GIS land cover databases, and other decision support tools to help guide delivery of future conservation practices to benefit species of conservation concern throughout NE PFW focus areas.

Five-year Targets

- PFW state coordinator will ensure that all project accomplishments are accurately entered into HabITS by established due date for each FY.
- NE PFW staff will continue to provide the state coordinator with accurate information regarding technical assistance efforts throughout their areas of responsibility for inclusion into HabITS.
- Implement NE PFW program Monitoring Plan using established Level I, II, and III monitoring protocols.
- Produce Nebraska section of Region 6 PFW program annual accomplish report.
- Provide summary updates to partners at annual coordination meetings/events.
- Work with RWBJV GIS office to identify needs regarding spatially explicit species and treatment prioritization decision support tools.



Working closely with private landowners and key community-based partnerships will continue to be one of the most important ingredients to the success of the PFW program. Photo by Heather Johnson, USFWS.

External Factors

The ability of our staff to maintain strong and lucrative partnerships, throughout the state, in the face of difficult economic times is an external factor that may influence the NE PFW program's ability to meet our 5-year targets. In addition, the administrative burden and time associated with securing permits under Section 404 of the Clean Water Act to restore aquatic habitats for Federal Trust Species is an external factor which may influence the NE PFW program's ability to accomplish our 5-year targets for wetland, stream, and riverine habitats.

In addition, NE PFW program focus areas include both relatively intact landscapes with ranching as the primary land use, and highly modified landscapes that are primarily in row crop production. The economic and social pressures associated with a rapidly changing agricultural economy could have a significant impact on the program's ability to deliver effectively. Additional external factors that could potentially influence program efforts include the accelerated rate of occurrence of invasive species and the placement and location of utility-scale wind turbines, oil pipelines, and associated infrastructure. Others include, potential changes to ecological processes associated with climate change and other environmental factors such as flooding and/or prolonged drought.

Monitoring Plan

Background

NE PFW has partnered with over 1,000 farmers, ranchers, and other private landowners to restore fish and wildlife habitat on their lands since the program began in Nebraska. The NE PFW program works with private landowners and its diverse group of partners to restore important habitats throughout high priority conservation focus areas for the benefit of Federal Trust Species (see map). Private Landowner Agreements (PLAs) are entered into with private landowners throughout high priority landscapes to restore wetland, upland, riparian, riverine, and stream habitats. Since 1989, the NE PFW program has worked with over 1,000 private landowners and our diverse group of partners to restore approximately 57,000 acres of wetland; 255,000 acres of upland grassland and native woodlands; 320 miles of riparian, stream, and riverine habitats; and over 150 miles of sloughs, backwaters, and side channel habitats for Federal Trust Species.

The Strategic Habitat Conservation (SHC) framework has been embraced by the NE PFW program and its partners to help guide planning and conservation delivery in Nebraska. The process has been applied more in some conservation focus areas where technical and financial resources have been secured through larger formalized partnerships (e.g., Joint

Ventures, Landscape Conservation Cooperatives, and Cooperative Recovery Initiatives). Commitment to this framework has allowed the conservation community to leverage funding and target conservation delivery to landscapes that have the greatest potential to provide desired habitat conditions for focal species. The SHC framework is being applied in Nebraska to guide conservation delivery to benefit Federal Trust Species, including migratory birds (e.g., waterfowl, shorebirds, wading birds), grassland nesting birds, and federally listed species. The four basic elements of the SHC framework include: (a) biological planning, (b) conservation design, (c) program delivery, and (d) monitoring and research. The program delivery element of the SHC framework has been and will continue to be the emphasis of the PFW program in Nebraska. Implementation of on-the-ground habitat restoration projects that restore and protect priority habitats to increase and maintain Federal Trust Species populations was the primary goal of the PFW program, outlined in the PFW Mountain-Prairie Region Strategic Plan 2012–2016. However, to increase accountability and to measure, assess, and report on effectiveness, efficiency, and fiscal integrity of our habitat conservation practices/projects/program, three different levels of monitoring have been identified/developed per National and Regional guidance. The purpose and goal of this monitoring plan is to contribute toward the successful delivery of habitat restoration projects throughout Nebraska and contribute towards meeting the goals, objectives, and targets for the NE PFW program as identified in the PFW Mountain-Prairie Region Strategic Plan 2017–2021.

Level I – Compliance Monitoring For On-The-Ground Practices

To ensure that the on-the-ground habitat restoration practices identified within Private Landowner Agreements are completed and functioning a site visit will be conducted at the time of project completion (year 1). Photo points will be established before construction begins to document pre-project conditions and repeated during the Level I compliance monitoring site visit to document post-restoration conditions. Compliance monitoring will be conducted by the Service's private lands biologist in coordination with the landowner and other partners to the project. Site Visit Report form (Attachment 1) developed by the R6 PFW program will be filled out, recorded in HabITS, and filed in the official file. The initial Site Visit Report form will meet the requirements for Level I compliance monitoring as well as serve as the close-out report for the financial assistance award in PRISM. We will explore the potential of providing hand held electronic devices (e.g., tablets, I pads, etc.) to each PFW private lands biologist to use in the field, so that all compliance and biological monitoring forms can be filled out electronically and forwarded/downloaded to the State Coordinator or other assigned staff to upload into HabITS or other appropriate data bases.

Level II – Biological Monitoring At The Project Level

To document the response of the flora and fauna to the practices that were implemented as a result of the implementation of the habitat project, Level II – project level biological monitoring will be completed during the initial compliance monitoring (year 1) and repeated at least once between years 3 and 6 and again between years 8 and 10. During the site visits the project will be evaluated to determine if the vegetative composition and fish and wildlife use of the project is meeting anticipated goals. Photos will be taken from established photo points to document changes in project conditions over time. If funding is available, time lapse camera systems will be installed on a minimum of two projects per Focus Area to monitor both vegetative changes and wildlife use of the project throughout the year and over multiple years. Cameras will be set to automatically take pictures at one hour intervals, every day, 365 days a year (frequency and duration could vary depending on project). A Level II – Biological Monitoring Report form will be filled out, recorded in HabITS and/or other appropriate data bases, to tie biological data to spatial and other project information data, and filed in the official file. Information to be entered in the fillable sections of the Level II Biological Monitoring Report form (Attachment 2) will address attributes from Table 1.

Level III – Biological Monitoring At The Landscape Level

The NE PFW program staff will work with both internal and external partners to determine those species and landscapes that the PFW program, in coordination with its partners, can reach Level III biological monitoring at the landscape level. Level III biological monitoring will contribute towards evaluating the biological outcomes for target species from the acres/miles of habitat being restored throughout conservation focus areas, where the opportunity exists. Level III biological monitoring should take place at more of a landscape scale, but should be designed to incorporate projects implemented as part of the PFW program into the monitoring protocols. To effectively implement Level III biologically monitoring at the landscape level, involvement from other conservation partners (i.e., Rainwater Basin Joint Venture (RWB JV), Playa Lakes Joint Venture, Great Plains LCCs, Refuge I&M Team, Nebraska Game and Parks Commission (NGPC), and other partners) is needed to assist in identifying, prioritizing, implementing, and funding Level III biological monitoring efforts. Outcomes for Level III biological monitoring efforts will be used by the Service and its partners to help develop: (a) decision support tools, (b) habitat use models, and (c) other tools to help guide future conservation efforts throughout high priority focus areas. As a part of this process, each NE PFW program private lands biologist worked with its state counterparts and other conservation partners to identify and list ongoing monitoring efforts that are occurring throughout each of Nebraska's PFW conservation focus areas (Attachment 3).

| Table 1. Core Biological and Habitat Monitoring Metrics | | |
|---|--|---|
| NE PFW Conservation Practice | Key Habitat Attributes (Presence or Absence) | Federal Trust Species and Species of Concern (Presence or Absence Only) |
| Grassland Restoration and Enhancement | Native Grass Species (Y/N) Native Forb Species (Y/N) Grass/Forb Sp. Representative of Seed Mixture (Y/N) Milkweed (Y/N) Invasive Species (Y/N) | Grassland Songbirds (Y/N) Prairie Grouse (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Monarch Butterfly (Y/N) |
| Wetland Restoration and Enhancement | Hydrology (Y/N) Native Hydrophytes (Y/N) Mudflats (Y/N) Invasive Species (Y/N) Suitable Buffer (Y/N) | Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N) |
| Riverine Restoration and Enhancement | Sandbar Habitat (Y/N) Sandbar Nesting Habitat (Y/N) Riverine Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N) | Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N) |
| Stream Restoration and Enhancement | Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N) | Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N) |
| Riparian Restoration and Enhancement | Native Grass Species (Y/N) Native Forb Species (Y/N) Native Woody Species (Y/N) Grass/Forb Sp. Representative of Seed Mixture (Y/N) Milkweed (Y/N) Roosting Habitat (Y/N) Invasive Species (Y/N) Native Hydrophytes (Y/N) Fish Access (Y/N) Hydrology (Y/N) Fish Barriers (Y/N) Suitable Buffer (Y/N) | Waterfowl (Y/N) Shorebirds (Y/N) T&E Species (Y/N) Wading Birds (Y/N) Monarch Butterfly (Y/N) Grassland Birds (Y/N) Native Fishes (Y/N) River Otters (Y/N) |



Nebraska PFW private lands biologist conducting monitoring on a habitat project located in the Sandhills of Nebraska. USFWS photo.

Examples of Ongoing Level III Landscape Level Biological Monitoring

A. Rainwater Basin – Whooping Crane CRI Monitoring

Project Name

Wetlands, Watersheds, and Whooping Cranes: A Comprehensive Approach to Wetland Habitat Restoration in the Rainwater Basin of Nebraska.

Project Goal

The goal of this project is to contribute toward the recovery of whooping cranes by conserving stopover habitat and achieving objectives identified in the Whooping Crane Recovery Plan, PFW Mountain-Prairie Region Strategic Plan, RWBJV Implementation Plan, RWB Wetland Management District Comprehensive Conservation Plan, and NGPC State Wildlife Action Plan.

Monitoring

To monitor the effectiveness of restoration efforts, the following monitoring activities are ongoing in conjunction with this project: (a) collecting spring aerial photography to complete annual habitat survey; (b) installing piezometers/level loggers to record water level at a subset of wetlands that receive and do not receive watershed restorations; (c) conducting whooping crane surveys throughout the whooping crane spring and fall migration seasons; and (d) assessing abiotic wetland quality factors. Data collected from these efforts are being used to document and quantify the impacts of restoration activities on wetland hydroperiod and wetland contaminants, as well as allow for more robust statistical models to be developed to describe habitat selection by whooping cranes and help guide future

restoration efforts throughout the RWB. The following is a brief summary of these on-going monitoring efforts:

- A total of 18 wetlands were chosen for water depth monitoring, including nine wetlands targeted for restoration and nine control wetlands. Eighteen Solinst Levellogger pressure transducers (Model F15/M5, Solinst, Canada) were installed to record water depth every 6 hours in the 18 different sites. At three of the sites, a Solinst Barologger that records barometric pressure every 6 hours was installed. Site visitations are conducted weekly during summer months and monthly during winter months.
- Aerial whooping crane surveys are conducted every two days during spring and fall migrations. The current protocol requires at least 16 flights to be conducted each season, with more flights being added when needed in order to cover the entire migration. The flight route allowed the survey of 109 wetlands, including all 34 public wetlands and 75 additional privately-owned wetlands located in the study area. The surveys began at or shortly after sunrise, and averaged 106 minutes in duration.
- Soil samples are also collected from the 18 wetlands which contained pressure transducers as well as two additional wetlands in order to assess the abiotic factors affecting the wetlands. A total of five soil samples are collected across each wetland in the spring and fall. Spring samples are used to determine the amount of: (a) general soil constituents (e.g., pH, soluble salts, phosphorus, organic matter), (b) pesticides (e.g., atrazine, neonicotinoids), (c) metals (e.g., arsenic, mercury), and (d) lead shot. The fall soil samples are only used to assess the amount of general soil constituents.

This Cooperative Recovery Initiative project is a cross-programmatic effort that is being successfully coordinated with the Service's PFW program, RWB Wetland Management District, RWBJV, and the Nebraska Ecological Service's Field Office.

B. North Platte River – Great Plains Landscape Conservation Cooperative

Project Name

Sandhill Cranes and Waterfowl of the North Platte River Valley: Evaluation of Habitat Selection to Guide Conservation Delivery.

Project Goal

The goal of this project is to identify and address key uncertainties related to the ecological requirements of sandhill cranes and waterfowl on the North Platte River that can ultimately be implemented as a decision

support tool directing “on-the-ground” habitat delivery strategies. Anticipated outcomes will include surveys documenting population estimates and locations; vegetation and wetland mapping; and a compilation of additional ecological habitat covariates that will be implemented into habitat suitability models for sandhill cranes and waterfowl. Results will be applied by partners to refine local habitat initiatives and direct conservation delivery. The products include: (a) survey data documenting the distribution and abundance of sandhill cranes and waterfowl roosting in the North Platte River Valley, (b) high resolution vegetation map characterizing crane and waterfowl habitat, (c) species distribution models describing habitat and habitat selection, and (d) decision support tools to prioritize conservation actions for cranes and waterfowl.

Monitoring

A combination of aerial and ground surveys will be incorporated to develop a statistically valid, spatially balanced sampling protocol to document distribution and abundance of sandhill cranes and waterfowl during spring migration. This data will be captured in a geospatial environment where location and estimated numbers of individuals will be documented as part of the survey protocol. Annually, a total of four aerial surveys for waterfowl will be conducted once weekly from February 15 through March 30 and six aerial surveys for cranes will be conducted once weekly from March 1 through April 30.

The results collected from these surveys will provide the conservation partners important information relating to sandhill crane and waterfowl use and habitat parameters along the North Platte River. These data will allow the conservation partners to evaluate spring-use of the North Platte River by sandhill cranes and waterfowl and the associated habitat conditions. Results of these surveys will also be analyzed by the conservation partners to develop more robust geospatial species distribution models. The statistical analysis will provide new insight into local and landscape factors that are influencing sandhill crane roost site selection and areas of high waterfowl use and habitat selection in the North Platte River. This surveying and modeling effort will significantly improve knowledge gaps related to habitat parameters and habitat selection for sandhill cranes and waterfowl within the North Platte River and its associated wetlands. The species occurrence and distribution models, land cover map, and decision support tools developed from this project will be used by the conservation partners to guide habitat delivery decisions and conservation planning for these species.

This multi-agency and organization projects is being conducted by the Service, DU, RWBJV, University of Nebraska – Lincoln, and NGPC. This project will contribute towards the goals and objectives of each of the agencies and organizations represented as well towards the mission of the Service and the conservation community as a whole.

C. Sandhills - Monitoring Abiotic and Biotic Parameters within Nebraska Sandhill Lakes

Project Name

Influence of Common Carp (*Cyprinus Carpio*) on Abiotic and Biotic Parameters within Nebraska's Sandhill Lakes.

Project Goal

Natural lakes of the Sandhill's cover a large region of the state and are important and unique ecosystems. Monitoring changes in these natural lakes is vital to see the various effects that climatic change and biotic introductions have on these systems. Little research has been conducted on the Nebraska Sandhill's lakes in recent years, leading to a large void in data. The last substantial study done on these lakes was done in 1977. In order to see the changes over the last 40 years, lakes in Brown County have been selected as the primary focus. The objective of this monitoring effort is to define the current abiotic and biotic parameters of three selected Sandhill chain lakes within Brown County, Nebraska. Two of the lakes contain established carp populations while the third lake was recently rotenoned, and thought to be carp-free.

Monitoring

The primary lakes for this study occurred in the same drainage and included: Willow Lake, Diamond Lake, and Rossenbach Lake. Additional lakes will also be sampled. Fish compositions and densities were sampled using 2 trap nets per lake. Zooplankton were collected using an 80-µm mesh Wisconsin-style zooplankton net, which were identified and quantified to common taxa groups. Water quality parameters including Secchi depth and pH were also collected. Lakes/wetlands included as a part of this effort are slated to be restored through a partnership approach and will involve the landowner, Sandhills Task Force, NGPC, and the Service's PFW program. Restoration projects are in different stages of the planning process.

The objectives for the abiotic component of this project are to: (a) to map the current lakes to compare the size and location to historical data and (b) to measure basic water quality parameters to compare to historical data and to elucidate the health of the system. The objectives for the biotic parameters are to (a) identify and quantify the zooplankton to the lowest possible taxa and (b) identify and quantify fish species to make comparisons between lakes.

This Sandhills lakes research and monitoring effort is being successfully coordinated by the University of Nebraska at Kearney Department of Biology, the NGPC, and the Service's PFW program.



Attachment 1 NE PFW Level I Monitoring Form



SITE VISIT REPORT

Landowner Agreement # _____

Prism FA Award # _____

Final or Interim

Select One

Scope of Work

(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

Project Status

(To be used for an interim report ie...what's been done up to the 1 year mark)

(Example Language)-About 2 paragraphs

Species Benefited

_____. (You can reference conservation plans as/if you deem necessary)

Optional/ Literature Cited: (Example)

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

Payment Method

Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # ____ (project type ex. Wetland enhancement) has been completed (or for interim...is in the process of being completed) in accordance with all provisions of the agreement.

PFW Biologist

Date

Landowner / Cooperator

Date



Attachment 2
NE PFW Level II

Biological Monitoring Report Form



To be completed prior to Monitoring Accomplishment

Agreement Date: _____ Date Work Completed: _____

PLA Number: _____ County: _____

Accomplishment Type: (Acres/Miles):

Upland _____ Wetland _____ Riparian _____ Riverine _____ Stream _____ Sloughs _____

Primary Trust Resources: _____

Accomplishment Objectives:

Photo Point Coordinates (Decimal Degrees)

Photo Point # _____ Lat: _____ Long: _____

Photo Point # _____ Lat: _____ Long: _____

Photo Point # _____ Lat: _____ Long: _____

Photo Point # _____ Lat: _____ Long: _____

Photo Point # _____ Lat: _____ Long: _____

Observed Biological and Habitat Monitoring Metrics: (related to accomplishment objectives)

(See Table 1 in NE PFW Level II Monitoring Guidelines)

Factors that influence current condition: (i.e. climate, grazing, time since fire or other disturbances)

Cooperator Comments: (are cooperator's objectives being met?)

Are accomplishment objectives being met: Yes No

Observations:

Nebraska PFW Level II Monitoring Guidelines

- Timing of Monitoring:
Attempt to monitor same time of year (i.e. Fall, Spring)

Monitoring for specific wildlife species should adhere to established monitoring protocols if applicable/available
- Minimum of one photo point per accomplishment
- Standardized photo name (ie NE-64850-15, 2015-06-01-P1N)
(PLA Number-Year-Month-Day-Photo Point # Direction)
- Monitoring Veg Response:
Estimate veg condition related to accomplishment

Objectives related to (height, density, species comp)
- Comments regarding whether accomplishment objectives are being met could include:
Concerns, Observations, Recommendations, Future Project Needs
- Level II Biological Monitoring Report form will address attributes from Table 1

Attachment 3

Nebraska Ongoing Monitoring Efforts Listed by Focus Area

Central Platte River Focus Area

- A. Whooping Crane Monitoring/Surveys
 - i. Ongoing aerial monitoring of whooping cranes within the central Platte River Valley.
 - ii. Monitoring efforts occur between March 15th and May 10th, and October 10th thru November 15th.
 - iii. Conducted by Platte River Recovery Program.
- B. Sandhill Crane Surveys/Monitoring
 - i. Ongoing weekly spring aerial surveys/monitoring of sandhill crane roost sites and distribution within the central Platte River.
 - ii. Conducted by Crane Trust.
- C. Annual Sandhill Crane Survey
 - i. Long term aerial survey conducted during the 3rd week of March to survey number of sandhill cranes. Transect survey across suitable habitats.
 - ii. Conducted by Service.
- D. Plains Topminnow Surveys/Reintroduction
 - i. Surveys of plains topminnows across Nebraska.
 - ii. Looking at numbers of individuals, locations and habitat affiliations.
 - iii. Propagation and reintroduction of individuals into restored and existing native habitats.
 - iv. Conducted by University of Nebraska-Kearney and NGPC.
- E. Northern River Otter Telemetry Study
 - i. To determine numbers and distributions of river otters.
 - ii. Telemetry project to look at movement, natal den site selection and nocturnal foraging habits.
 - iii. Conducted by NGPC.
- F. Least Tern and Piping Plover Surveys/Monitoring
 - i. Annual weekly spring and summer airboat and ground surveys.
 - ii. Monitoring of nests, nest success and habitat associations.
 - iii. Conducted by Platte River Recovery Program, USGS, Service and NGPC.
- G. Least Tern and Piping Plover Movement Study
 - i. Marked band survey with listening monitoring stations located along the river.
 - ii. Recorders capture bird movement as they fly up and down the river.
 - iii. Conducted by USGS.
- H. Least Tern and Piping Plover Banding Study
 - i. Capture and banding of least tern and piping plovers.
 - ii. Long term study to look at seasonal and yearly movements of birds.
 - iii. Conducted by USGS.
- I. Sandhill Cranes/Wet Meadow Use Study
 - i. Time-lapse cameras set up in wet meadows to record daily movements and activities of sandhill cranes in wet meadow along the river.
 - ii. Conducted by Crane Trust.
- J. Whooping Crane Telemetry Study
 - i. Telemetry study of whooping cranes up and down the flyway.
 - ii. Tracking whooping cranes movements and habitat selections.
 - iii. Conducted by Crane Trust and Service.
- K. Whooping Crane Habitat Selection Study
 - i. Study looking at habitat associations affiliated with roost site selections of whooping cranes across Nebraska.
 - ii. Conducted by University of Nebraska-Lincoln.

- L. Least Tern and Piping Plover Habitat Availability Study/Model
 - i. Spatial evaluation of potential available nesting habitat for least terns and piping plovers.
 - ii. May lead to predictive flow/sediment transport model linked to habitat availability.
 - iii. Conducted by Platte River Recovery Program and RWBJV.
- M. Bat Survey and Habitat Use Study
 - i. Survey of bats along the central Platte River. Study of species and use along selected sections of the river.
 - ii. Microphones and recorders placed along the river to records sounds all day and night long.
 - iii. Computer program identifies and records sounds of bats by species.
 - iv. Conducted by University of Nebraska-Lincoln.
- N. Mid-Winter Waterfowl Survey
 - i. Aerial survey to look at numbers and distribution of waterfowl.
 - ii. Conducted by Service and NGPC.
- O. Nebraska Breeding Bird Survey
 - i. Conducted by collection of organizations and individuals.
- P. Other Related Models and Decision Support Tools
 - i. Whooping Crane Habitat Suitability Index Model
 - ii. Wet Meadow/Grassland GIS Land Coverage Database
 - iii. Invasive Species GIS Land Coverage Database
 - iv. Central Platte River GIS Vegetative Mapping Database
 - v. Sandhill Crane Model and Distribution Map

North Platte River Focus Area

- A. Sandhill Crane Surveys
 - i. Single day flight to determine distribution and abundance.
 - ii. Service flies North Platte to Hershey.
 - iii. NGPC flies areas outside Service zone (Hershey westward).
 - iv. Ground surveys occur in select areas if conditions and manpower allow.
- B. Mid-winter Waterfowl Survey
 - i. Flight and ground survey to determine distribution and abundance of ducks, geese and swans.
 - ii. Usually conducted first week of January annually.
 - iii. Conducted by Service and NGPC.
- C. Waterfowl and Crane Habitat Use (LCC project)
 - i. Flight surveys to determine distribution, abundance, habitat use of ducks, geese, swans, and cranes.
 - ii. 4 flights for waterfowl between February 15 and March 30.
 - iii. 4 to 6 flights for cranes between March 1 and April 30.
 - iv. Funded for 2014 and 2015.
 - v. Collaborative effort between Service, DU, RWBJV, NGPC, and UNL-Extension.
- D. Canid Project
 - i. Determine distribution and abundance of canids with emphasis on swift fox.
 - ii. Survey station locations currently being determined across west and southwest NE.
 - iii. Post-doc research through Coop Unit and NGPC.
 - iv. Will occur in 2014-2019.
- E. Bald and Gold Eagle Nesting Surveys
 - i. Establish use and success of current and new nests.
 - ii. Conducted by NGPC, Service, and others.
- F. River Otter
 - i. Proposed project to determine distribution and abundance of river otters statewide.
 - ii. Under consideration by NGPC and partners but not finalized.

Rainwater Basin Focus Area

- A. Whooping Crane Aerial and Ground Surveys
 - i. Aerial surveys are being conducted weekly during the whooping crane migration window (March 23 – May 10 and September 16 – November 16).
 - ii. A predefined route allows the weekly surveys to document presence and absence at a majority of the wetlands (including those with watershed restorations) in the western RWB.
 - iii. Additional sightings will allow the current HSI model to be refined, while a consistent survey protocol and additional observations will allow for more robust statistical models to be developed to describe habitat selection by whooping cranes.
 - iv. Collaborative effort funded in part through Cooperative Recovery Initiative.
 - v. Funding secured for surveys for Spring and Fall 2013-2016.
 - vi. Partners include NE PFW, RWBJV, NEFO, RWB-WMD, NGPC, and Crane Trust.
- B. Water Depth/Hydrology Monitoring
 - i. Piezometers/level loggers and staff gauges installed to record water level at a subset of wetlands that receive and do not receive watershed restorations.
 - ii. Data collected from these efforts will provide a mechanism to document and quantify the impacts of restoration activities on wetland hydroperiod.
 - iii. Collaborative effort funded in part through Cooperative Recovery Initiative.
 - iv. Funding secured for surveys for Spring and Fall 2013-2016.
 - v. Partners include NE PFW, RWBJV, NEFO, and RWB-WMD.
- C. Spring Aerial Photography and Aerial Habitat Surveys
 - i. Collaborative effort funded in part through Cooperative Recovery Initiative.
 - ii. Funding secured for aerial surveys and Spring photography for 2013-2017.
 - iii. Partners include NE PFW, RWBJV, NEFO, RWB-WMD, NGPC, and Crane Trust.
- D. Wetland Water Quality Monitoring
 - i. Evaluate the effect of increased runoff to the wetlands by collecting water and sediment samples at 18 wetland sites.
 - ii. Water and sediment sampling will occur from April to September and July to September, respectively, between 2014 and 2016.
 - iii. Water column and sediment samples will be analyzed for ammonia, total nitrogen, nitrate, ortho-phosphorus, total phosphorus, electrical conductivity, chloride, sodium, potassium, and pH, as appropriate.
 - iv. Collaborative effort funded in part through Cooperative Recovery Initiative.
 - v. Funding secured for 2014-2016.
 - vi. Partners include NE PFW, RWBJV, NEFO, and RWB-WMD.
- E. Reed Canary Grass Adaptive Management Project
 - i. Goal is to transition reed canary grass dominated wetlands to wet meadow vegetation dominated wetlands by implementing actions that are well-informed and are improved upon over time.
 - ii. Conducted by Service, RWBJV, and UNL.
- F. Food Use by Anatidae
 - i. Determine and describe the diet of northern pintail, American wigeon, northern shoveler, green-winged teal, mallard, and gadwall.
 - ii. Conducted by RWB-WMD.
- G. Prairie-Chicken Leks Surveys
 - i. Monitoring efforts to looking at the distribution and abundance of greater prairie-chicken lek sites and habitat selection.
 - ii. Development of Greater Prairie Chicken Habitat Suitability Model.
 - iii. Conducted by NGPC and RWBJV.
 - iv. Surveys being conducted in the western basins.
- H. Native Pollinator Communities Study
 - i. Study looking at the influence of wetland restorations on native pollinators.
 - ii. Study being conducted by UNL.

- I. Habitat Suitability of Ephemeral Playas for Migratory Waterbirds
 - i. Three year study looking at shorebird and waterfowl food availability.
 - ii. Land use change and its influence on shorebirds.
 - iii. Funding provided through a Great Plains LCC grant, NGPC, and RWBJV.
 - iv. Being conducted by UNL in coordination with NGPC, RWBJV and partners.
- J. Amphibian Monitoring
 - i. Amphibian distribution and habitat use on public wetlands, restored wetlands, cropped wetlands, and non-cropped wetlands.
 - ii. Being conducted by UNL in coordination with NGPC.
- K. Soil Erosion and Sediment Deposition in Playa Wetlands
 - i. Ongoing two-year (2013 and 2014) study.
 - ii. Funding provided through a Great Plains LCC grant and RWBJV.
 - iii. Being conducted by UNL in coordination with RWBJV and partners.
- L. Land use Influences on Greenhouse Gas Fluxes in Playa Wetlands and Watersheds
 - i. Ongoing study conducted by Dr. Loran Smith with Oklahoma State.
 - ii. Funded in part with a grant from EPA.
 - iii. Scheduled to be completed in 2014.

Sandhills Focus Area

- A. GIS/Technology
 - i. Recent completion of a one million acre LIDAR project focused on Sandhills drainages with high potential for restoration.
 - ii. LIDAR data combined with GIS analysis tools will allow implementers to assess the function of wetlands and streams in selected drainages.
 - iii. In addition, LIDAR data can measure invasive tree densities in Sandhill grasslands.
- B. Valentine NWR Monitoring Efforts
 - i. The refuge has a longstanding vegetation monitoring program geared towards species diversity, abundance and structure.
 - ii. The refuge annually surveys for new and existing populations of western prairie fringed orchid and endangered blowout penstemon occurring on the refuge.
 - iii. The refuge also conducts an inventory of American Burying Beetles on an every 5-year basis.
 - iv. Each Spring, refuge employees conduct lek counts for both sharp tailed grouse and greater prairie-chicken.
- C. Long bill Curlew Surveys
 - i. Surveys are conducted by NGPC employees in western Sandhills starting in April of 2014.
 - ii. This work is a continuation of a Masters project completed in 2011 by Cory Gregory.
- D. Bird Communities and Grazing Systems
 - i. Study to looking at the variability of bird communities as a function of grazing systems and the underlying topographic variations found in Sandhills.
 - ii. Study to be conducted on McKelvie National Forest and adjacent private lands starting the Spring of 2014.
- E. Trumpeter Swan Movement Monitoring Study
 - i. A proposed study by NGPC (Mark Virtiska) and partners which will involve tracking (GPS) approximately 20 trumpeter swans.
 - ii. This project will focus on private lands throughout the western Sandhills.
- F. Sandhills Lake Renovations Monitoring Study
 - i. Proposed study by UNK and NGPC to fully understand the impact of lake renovation projects (rotenone) on lower trophic level communities found in Sandhills lakes.
 - ii. Study will begin prior to lake renovation and researchers will continue to monitor effects after renovation is complete.
 - iii. This study will build support for the Service, STF, and NGPC efforts to remove carp from selected lakes and wetlands.

- G. Wind Turbines and Demographics and Behavior of Prairie-Chickens Project
 - i. Project aims to provide information and analyses regarding the siting of towers and facilities and to aid preparation of mitigation.
 - ii. The research will be collecting data that assesses avoidance structures, and the influence of turbine noise on prairie-chicken behavior.
- H. Year round ecology of Greater Prairie-Chicken in Native Habitat – The Sandhills of Nebraska
 - i. Research and monitoring effort to develop baseline data on survival and reproductive parameters to compare with populations elsewhere that may be in decline or in jeopardy.
- I. Prairie Grouse Lek Surveys
 - i. Determine presence and distribution of grouse leks by species.
 - ii. Conducted by NGPC and Service.
 - iii. Monitor distribution and abundance of prairie grouse lek sites and habitat selection.
 - iv. Development of greater prairie-chicken Habitat Suitability Model.
 - v. Conducted in April.
- J. Wetland Assessment Project
 - i. UNL led project geared at assessing the condition of wetlands in Nebraska.
 - ii. Wetlands will be evaluated for vegetation, algae, amphibians, water quality, soils and hydrology.
 - iii. Outcomes will be used to help understand the condition of Nebraska's wetlands that can be used to target wetland conservation efforts.
 - iv. EPA sponsored project.
- K. American Burying Beetle Model and Distribution Map
 - i. Surveying, trapping and marking of American burying beetles.
 - ii. Distribution and abundance study.
 - iii. Model development for habitat suitability and distribution.
 - iv. Conducted by UFWFS, NGPC, and University of Nebraska-Kearney.
- L. Cedar Tree Invasion Model
 - i. Land cover data base development.
 - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
 - iii. Conducted by RWBJV, Service and NGPC.
- M. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
 - i. Ongoing yearly survey for breeding birds.
- N. Other Related Models and Decision Support Tools
 - i. Trumpeter Swan Landscape – Level Habitat Use Model for the Sandhills
 - ii. Prairie Grouse Habitat Use Models
 - iii. American Burying Beetle Habitat Use Model – Sandhills
 - iv. Long-Billed Curlew Habitat Suitability Model
 - v. Eastern Redcedar GIS Land Coverage Database
 - vi. Wet Meadow/Grassland GIS Land Coverage Database

Central Loess Canyons Focus Area

- A. Breeding Bird Routes
 - i. Determine presence and distribution of breeding birds.
 - ii. 9 routes, 453 stops, 3 minute point count/stop.
 - iii. Conducted by NGPC.
 - iv. Between May 27 and July 7 annually (began in 2009).
 - v. Concurs with USGS protocol.
- B. Prairie Grouse
 - i. Determine presence and distribution of grouse leks by species.
 - ii. Currently 8 routes with 25 to 30 stops/route.
 - a. May adjust to 12 routes with 20 stops to meet GIS Lab protocol.
 - iii. Conducted by NGPC, and PF/QF.
 - iv. Conducted in April (began in 2006).

- C. American Burying Beetle
 - i. Determine distribution and abundance of ABB and other carrion beetles.
 - ii. 28 traps, approx. 5 miles apart, 5 trap nights/trap.
 - iii. Conducted by NGPC, PF/QF, Service, UNK and others.
 - iv. Between August 10 and August 25th annually (began in 2007).
 - v. Concurs with UNK/Service protocol.
- D. Winter Bird Count
 - i. Determine presence of species.
 - ii. Conducted by NGPC and others.
 - iii. Between December 4 and January 5 annually (began in 2013).
 - iv. Follows Christmas Bird Count protocol.
- E. Canid Project
 - i. Determine distribution and abundance of canids with emphasis on swift fox.
 - ii. Survey station locations currently being determined across west and southwest NE.
 - iii. Post-doc research through Coop Unit and NGPC.
 - iv. Will occur in 2014-2019.
- F. Vegetation Monitoring
 - i. Determine species richness; take photos from photo points on small subset of restoration projects annually.
 - ii. Conducted by PF/QF CWB and Service.
- G. Cedar Tree Invasion Model
 - i. Land cover data base development.
 - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
 - iii. Conducted by RWBJV, Service and NGPC.

Loess Hills/Loup Rivers/Central Table Playas Focus Area

- A. Greater Prairie-Chicken Lek Survey
 - i. Long term study looking at the distribution and abundance of greater prairie-chicken lek sites and habitat selection.
 - ii. Development of greater prairie-chicken habitat suitability model.
 - iii. Conducted by NGPC and RWBJV.
- B. Whooping Crane Model for Central Table Playas
 - i. Model development based on habitat affiliations and habitat selection data for whooping cranes.
 - ii. Conducted by RWBJV, Service and NGPC.
- C. Waterfowl Model for Central Table Playas
 - i. Model development based on habitat affiliations and habitat selection data for waterfowl.
 - ii. Conducted by RWBJV, Service and NGPC.
- D. Cedar Tree Invasion Model
 - i. Land cover data base development.
 - ii. Model development looking at the invasion of eastern redcedars in grasslands overtime.
 - iii. Conducted by RWBJV, Service and NGPC.
- E. Prairie Dog and Black-footed Ferret Habitat Suitability Index and Model
 - i. Identification of existing prairie dog towns and development of habitat suitability model.
- F. Tern and Plover Survey and Nest Monitoring
 - i. Survey of Loup Rivers and monitoring of least tern and piping plover nests.
 - ii. Conducted by NGPC and Service.
- G. American Burying Beetle Model and Distribution Map
 - i. Survey and trapping and making of American burying beetles.
 - ii. Distribution and abundance study.
 - iii. Model development for habitat suitability and distribution.
 - iv. Conducted by RWBJV, UFWWS, NGPC, and University of Nebraska-Kearney.

- H. Mid-Winter Waterfowl Survey
 - i. Aerial survey to look at numbers and distribution of waterfowl.
 - ii. Conducted by Service and NGPC.
- I. Whooping Crane Telemetry Study
 - i. Telemetry study of whooping cranes up and down the flyway.
 - ii. Tracking whooping cranes movements and habitat selections.
 - iii. Conducted by Crane Trust and Service.
- J. Plains Topminnow Surveys/Reintroduction
 - i. Surveys of plains topminnows across Nebraska.
 - ii. Looking at numbers of individuals, locations and habitat affiliations.
 - iii. Propagation and reintroduction of individuals into restored and existing native habitats.
 - iv. Conducted by University of Nebraska-Kearney and NGPC.
- K. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
 - i. Ongoing yearly survey for breeding birds.
- L. Nebraska Bird Partnership HABS Model Database
- M. River Otter Survey
 - i. Proposed project to determine distribution and abundance of river otters statewide.
 - ii. To be conducted by NGPC.

Eastern Tallgrass Prairie Focus Area

- A. Ongoing Monitoring of Eastern Tallgrass Prairie Restoration Projects
 - i. Permanent photo points have been established on most of tree clearing project sites completed in the Southeast Prairie and Sandstone Prairie landscapes.
 - ii. Panoramas are taken prior to project initiation and on an annual to semi-annual basis.
 - iii. Timelapse camera systems have been set up on 3 project sites and automatically take pictures at one hour intervals.
 - iv. Permanent vegetation monitoring plots have been established on 20 project sites and sites are re-sampled every 5 years.
 - v. Monitoring efforts are being conducted by NGPC and Northern Prairie Land Trust.
- B. Prairie-Chicken Lek Monitoring
 - i. Permanent driving routes were established to monitor greater prairie lek use in the Sandstone and Southeast Prairies Biological Unique Landscapes.
 - ii. Routes are run several times annually.
- C. Stream Fish Survey
 - i. Fish communities are being sampled in several small streams within project sites in both Sandstone and Southeast Prairies landscapes.
- D. Insect Studies
 - i. A series of research projects focusing on determining how insects respond to landscape and other variables (prairie size, prairie fragmentation, plant composition, etc.) are in the planning process.
 - ii. Insect groups studied so far include ground beetles, ants, bees, parasitic wasps, and pollinators in general.
- E. Patch Burn Study
 - i. Studied vegetation and livestock responses to the “patch burn” grazing management technique.
- F. Grassland Breed Birdy Study
 - i. Studied the initial response of breeding birds to tree clearing on grasslands in the Southeast Prairies BUL.

- G. Greater Prairie-Chicken Lek Monitoring
 - i. Standard routes have been run since 1978 by NGPC in Keya Paha County.
 - ii. Additional route was set up and run in Knox County (Verdigris/Bazile) as part of greater prairie-chicken modeling effort done with RWBJV's GIS shop.
 - iii. Opportunistic surveys for lek locations are run annually in Willow Creek Prairies, Elkhorn Confluence, Verdigris/Bazile, Ponca Bluffs, Missouri River, Keya Paha, Middle Niobrara, and Lower Niobrara BUL's.
- H. Western Prairie Fringed Orchid Surveys
 - i. NGPC surveys known populations about every 5 years. They look at individual sites annually.
 - ii. Currently beginning the second year of a hawkmoth pollinator study in Willow Creek BUL's.
- I. Small White Lady Slipper Orchid Surveys
 - i. Surveys conducted in Keya Paha BUL in 2014.
 - ii. Annual surveys run in conjunction with NDOR along Hwy 13.
- J. Shorebird Surveys
 - i. Shorebird use of small playa wetlands was conducted in Verdigris Bazile BUL in 2009.
- K. Nebraska Breeding Bird Survey (Collection of organizations and individuals)
 - i. Ongoing yearly survey for breeding birds.
- L. Small Mammal and Burying Beetle Surveys
 - i. Monitoring efforts were conducted in 2006 in Verdigris Bazile/Lower Niobrara River BUL to determine distribution and abundance of small mammals and burying beetles.

Partners for Fish and Wildlife has been successful collaborating people, communities and cultures with landscapes, wildlife and environment for the betterment of nature for future generations.

Landowner Mike Kelly, Nebraska

